

Military Value / Joint Use

Otis Air National Guard Base

The 102nd Fighter Wing maintains a 24/7 continuous air defense alert status providing peacetime surveillance, and ensuring air sovereignty for the Northeast United States.

Its superior location on Cape Cod is ideal because of the strategic coastal location in the Northeast sector of the United States. Otis is ideally positioned near the center of our nation's most heavily traveled international and domestic air corridors. Immediate launch and response times can be achieved to intercept any inbound air traffic. Its location is significant due to its unfettered access to supersonic airspace in the Northeast.

Its strategic location also aligns itself with some of the best training airspace in the U.S. The Narragansett Bay Complex is located in the waters adjacent to the coasts of Massachusetts, Rhode Island and Long Island, New York. It is controlled by the Fleet Area Control and Surveillance Facility, Virginia Capes (FACSFAC VACAPES) Naval Air Station (NAS) Oceana.

The complex is composed of the following non-instrumented warning areas and Operating Area (OPAREA):

- Warning Area 105 (W-105)
- Warning Area 106 (W-106)
- Narragansett Bay OPAREA

W-105/W-106/NBOA areas are scheduled for optimum use by apportioning areas for specific users and types of exercises.

The Narragansett Bay OPAREA is an exercise/operating area off Massachusetts, Rhode Island, and New York coasts. It overlaps W-105, W-106, and submarine transit lanes, extending approximately 100 NMI south, and east approximately 220 NMI. The area extends from surface to ocean bottom, and is used for surface and subsurface exercises.

The NBOA surface operating areas are located off the coast of Long Island and Narragansett Bay. These areas are numerically separated into lettered sub areas. Submarine operations are normally conducted in areas 1 through 3 and 6 through 20.

Warning Area 105 (W-105) is special-use airspace over the Narragansett Bay Range and is located approximately 35 Nautical Miles from Otis Air National Guard Base. W-105 is divided into five sub areas. W-105 floor/ceilings are as follows:

- W-105A&C Surface to FL500
- W-105B Surface to 17,999-feet
- W-105D Surface to 14,999-feet
- W-105E 15,000-feet to FL500

W-105 airspace is used for air-intercept training. It is also used for surface-to-air gunnery exercises using conventional ordnance and Antisubmarine Warfare (ASW) exercises. Live firing of conventional ordnance is authorized in the northeastern and western portion of W-105. The airspace is also used for flight-testing.

Coast Guard Air Station Cape Cod

The U.S. Coast Guard is co-located within the boundaries of Otis Air National Guard Base. Air Station Cod is one of the largest port security and marine patrol bases in the United States and is a key component in the Department of Homeland Security. The Coast Guard provides regional port security, harbor patrol, law enforcement and maritime safety. Air Station Cape Cod crews fly both HH-60J "Jay Hawk" helicopters and HU-25 "Falcon" jets to perform a variety of Coast Guard missions. Their primary mission, Search and Rescue (SAR), involves the protection of life and property in the offshore areas from the Canadian border to Long Island. In the past two decades, aircrews from Air Station Cape Cod have launched on over 6700 cases, saved nearly 2400 lives, and prevented the loss of \$340 million worth of property.

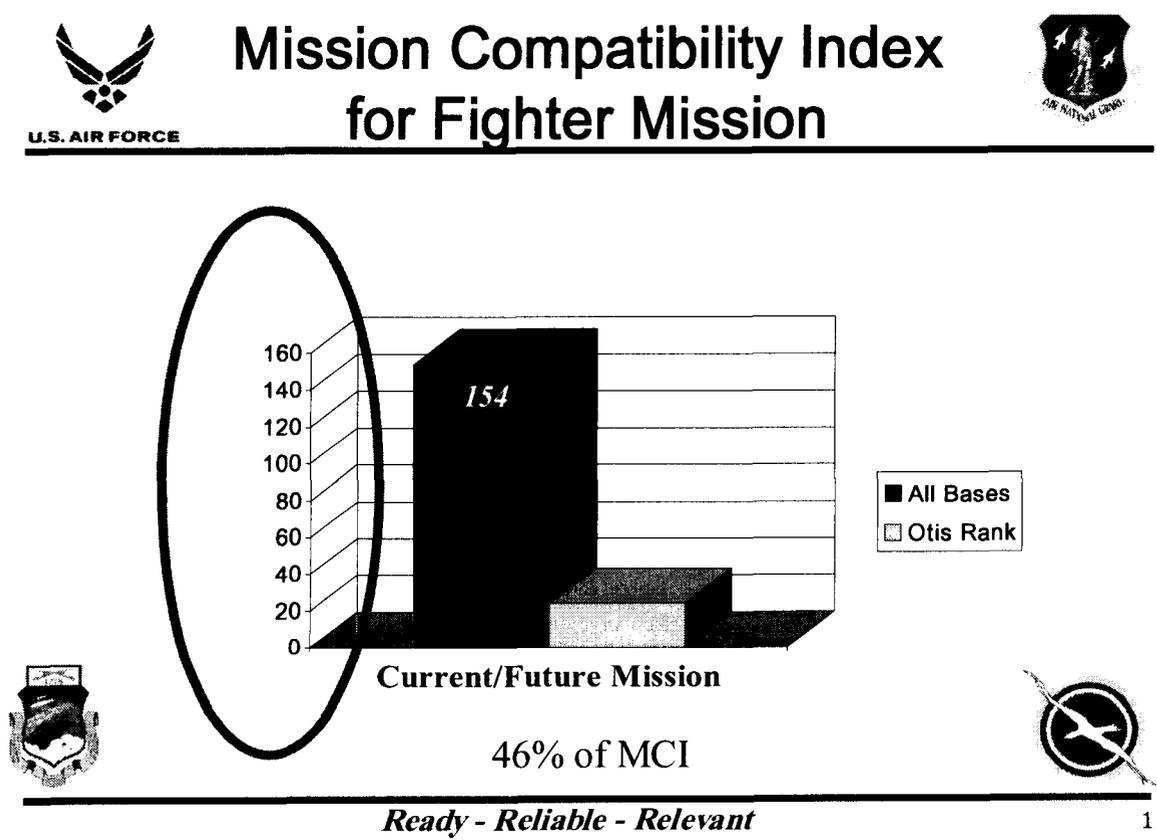
Army Aviation Operations

The Army National Guard on the MMR trains for traditional military missions and homeland security. The MMR provides an excellent small scale Army Aviation training environment for both day and night operations. Combat organizations have conducted small-scale Combined Arms exercises with an Air Assault element with great success. Numerous departure and landing zones are available for planning use by trainers and Aviation units who provide the support.

The Army Aviation Support Facility is co-located within the boundaries of Otis Air National Guard Base. It provides aircraft maintenance support to visiting aircraft including the UH-60, UH-1H and OH-58 helicopters. The facility has fully operational flight operations and maintenance functions. Night Vision Goggle training is approved for terrain flight levels on the MMR.

BRAC Data

The BRAC Data Calls for FY2005 directed organizations to respond to certain questions pertaining to Base/Air Operations. Organizations submitted responses and the information was analyzed. A Mission Compatibility Index was established linking data questions with an actual military value score. Upon review of the original BRAC questions and the graded responses, it appears that Otis Air National Guard Base was misassessed on its Military Value. Specifically, Questions involving “Current / Future Mission” were not answered at a base level.



The Fighter Mission Compatibility Index data sheet reports that Otis Air National Guard Base received a score of 28.15 for “Current / Future Mission”. It is unclear how our overall military value was assessed but it appears that we did not receive proper credit for our joint military operation and training airspace.

In Volume VI of the Base Closure and Realignment Report, The DOD Joint-Cross Service Group Capacity Analysis Report evaluated base ranges and special use airspace for training. Evaluation was based on joint use and training. It appears that Otis' location/joint operation was misassessed. Otis was not listed in the rating. See Below. (Pages 46-48)

Range/OPAREA Designation (Ilet from capacity data call)	Max Potential Capacity (Available) (Net NM3 (Column F) X 365 X 24) (NM3/Hrs/yr)	Standard (Annual NM3/hrs/yr) = Standard Hours/Year (Column J) * Net NM3 (Column F)	Current Usage (Scheduled Nm3/hrs/yr) Net NM3 (Column F) * Actual Scheduled hours (Column L)	SURGE = (Current Usage Scheduled (Column M) * 1.25)	Excess Percent (Col D) - surge (Col N) / (Col F) (%)
OTIS					
Atlantic City IAP AGS	1,261,440	569,040	258,912	323,640	46%
BARKSDALE AFB	44,711,040	21,232,640	2,719,516	3,399,395	84%
Barnes MPT	70,080	33,280	208	260	96%
BEALE AFB	91,524,480	43,463,680	1,461,648	1,827,060	96%
Boise Air Terminal AGS	56,186,640	26,882,240	8,041,194	10,051,493	62%
Bradley IAP AGS	38,211,120	18,145,920	1,182,123	1,477,654	92%
BUCKLEY AFB	243,860,880	115,806,080	12,004,524	15,005,655	87%
CANNON AFB	557,092,200	264,555,200	54,443,331	68,054,164	74%
Capital APT AGS	84,459,540	40,108,640	2,166,029	2,707,536	93%
Carswell ARS	4,038,360	1,917,760	1,248,904	1,561,130	19%
COLUMBUS AFB	141,846,913	67,361,091	18,802,049	23,502,561	65%
Dane County Regional - Truax Field AGS	282,510,000	134,160,000	9,296,939	11,621,174	91%
Dannelly Field AGS	65,472,240	31,091,840	14,200,600	17,750,750	43%
DAVIS-MONTHAN AFB	246,296,160	116,962,560	7,733,440	9,666,800	92%
Des Moines IAP AGS	308,746,200	146,619,200	22,349,240	27,936,550	81%
Duluth IAP AGS	1,601,520,720	760,539,520	-	-	100%
Dyess AFB	154,176,000	73,216,000	43,419,200	54,274,000	26%
Edwards AFB*	2,010,333,416	954,678,893	1,166,307,731	1,457,884,663	-53%
EGLIN AFB	3,738,312,480	1,775,271,680	1,290,244,132	1,612,805,165	9%
EIELSON AFB	2,254,780,200	1,070,763,200	109,296,906	136,621,133	87%
Ellington Field AGS	1,004,316,480	476,935,680	136,536,105	170,670,131	64%
ELLSWORTH AFB	304,865,520	144,776,320	10,554,880	13,193,600	91%
Elmendorf AFB	1,911,686,040	907,832,640	-	-	100%
Fort Smith Regional APT AGS	119,535,456	56,765,696	4,038,967	5,048,709	91%
Fort Wayne IAP AGS	53,760,120	25,529,920	3,302,624	4,128,280	84%
Great Falls IAP AGS	1,111,118,400	527,654,400	80,350,500	100,438,125	81%
Hancock Field AGS	108,878,040	51,704,640	2,997,430	3,746,788	93%
Harrisburg IAP AGS	1,717,573	815,651	-	-	100%
HILL AFB	613,831,596	291,499,936	613,786,657	767,233,322	163%
HOLLOMAN AFB	669,877,200	318,115,200	52,248,770	65,310,963	79%
Hulman Regional APT AGS	57,938,640	27,514,240	3,371,770	4,214,713	85%

Range/OPAREA Designation (list from capacity data call)	Max Potential Capacity (Available) (Net NM3 (Column F) X 365 X 24) (NM3/Hrs/yr)	Standard (Annual NM3/hrs/yr) = Standard Hours/Year (Column J) * Net NM3 (Column F)	Current Usage (Scheduled Nm3/hrs/yr) Net NM3 (Column F) * Actual Scheduled hours (Column L)	SURGE = (Current Usage Scheduled (Column M) - 1.25)	Excess Percent (Col D) - surge (Col N) / (Col F) (%)
Joe Foss Field AGS	60,444,000	28,704,000	2,760,000	3,450,000	88%
Key Field AGS	129,848,604	61,663,264	1,006,410	1,258,012	98%
KIRTLAND AFB	122,689,932	58,283,712	2,745,117	3,431,397	94%
Klamath Falls IAP AGS	859,180,800	406,012,800	15,891,610	19,864,513	95%
Lambert - St. Louis IAP AGS	255,091,200	121,139,200	17,473,200	21,841,500	82%
Langley AFB	16,258,560	7,720,960	259,008	323,760	96%
LAUGHLIN AFB	93,101,280	44,212,480	34,317,712	42,897,140	3%
Lincoln MAP AGS	40,120,800	19,052,800	-	-	100%
LUKE AFB	672,803,040	319,504,640	231,666,529	289,583,161	9%
McChord AFB	1,508,629,680	716,426,880	236,341,353	295,426,691	59%
MCCONNELL AFB	67,793,640	32,194,240	6,576,190	8,220,238	74%
Moody AFB	192,693,720	91,507,520	43,188,902	53,986,128	41%
MOUNTAIN HOME AFB	401,866,226	190,840,582	122,852,833	153,566,042	20%
NELLIS AFB	780,664,920	370,726,720	188,711,302	235,889,128	36%
OFFUTT AFB	81,012,480	38,471,680	638,112	797,640	98%
Pope AFB	10,608,360	5,037,760	1,226,743	1,533,429	70%
RANDOLPH AFB	97,560,120	46,329,920	28,740,660	35,925,825	22%
Rome Laboratory	436,276,345	207,181,461	-	-	100%
Schriever AFB	14,016	6,656	14,016	17,520	163%
Selfridge ANGB	566,929,680	269,226,880	37,860,854	47,326,068	82%
Seymour Johnson AFB	56,896,200	27,019,200	8,849,345	11,061,681	59%
Shaw AFB	371,607,960	176,471,360	85,602,183	107,002,729	39%
SHEPPARD AFB	157,574,880	74,830,080	48,610,587	60,763,234	19%
Sioux Gateway APT AGS	90,841,200	43,139,200	3,339,140	4,173,925	90%
Springfield-Beckley MPT AGS	168,962,880	80,238,080	37,988,500	47,485,625	41%
Tucson IAP AGS	659,986,985	313,418,477	73,718,818	92,148,522	71%
Tulsa IAP AGS	38,000,880	18,046,080	1,566,018	1,957,523	89%
TYNDALL AFB	71,584,793	33,994,606	9,022,707	11,278,384	67%
VANCE AFB	203,500,932	96,639,712	60,757,748	75,947,185	21%
VANDENBERG AFB	25,044,840	11,893,440	18,240,864	22,801,080	-92%
W. K. Kellogg APT AGS	14,392,680	6,834,880	243,164	303,955	96%
WHITEMAN AFB	187,989,162	86,273,392	3,591,052	4,488,815	95%

In Volume VI of the Base Closure and Realignment Report, The DOD Joint-Cross Service Group Infrastructure Steering Group/Military Value Analysis Report assigned numerical military value to joint training ranges/range complexes/OPAREAS at 135 installations. Otis was not listed and did not receive a rating. See Below. (Pages 16-20)

Education and Training JCSG	
Range and Collective Training Subgroup	
<i>Training</i>	
Installation/Location	Numerical Military Value Score
Eglin AFB, FL	63.60
Fort Wainwright, AK	62.63
Facsfac San Diego, Ca	61.81
White Sands Missile Range, NM	59.72
Fort Bliss, TX	56.55
Yuuna Proving Ground, AZ	52.40
Connamarianas, GU	50.18
Pacmistranfac Hawarea Barking Sands, HI	49.18
Navairwarcenwppdiv Pt Mugu, CA	48.85
Facsfac Vacapes Oceana, VA	48.59
CG MCB Campen, NC	46.73

Education and Training JCSG	
Range and Collective Training Subgroup	
<i>Training (Continued)</i>	
Installation/Location	Numerical Military Value Score
NAS Whidbey Island, WA	46.17
Fort Polk, LA	45.91
Dugway Proving Ground, UT	45.84
COMNAVAIRWARCENWPNDIV China Lake, CA	45.65
NAVSTAKAIRWARCEN Fallon, NV	45.43
NAVSTA Pearl Harbor, HI	45.42
CG MBB Camp Lejeune, NC	45.20
Fort Carson, CO	44.75
MCAS Yuma, AZ	44.17
Fort Lewis, WA	44.16
CG MAGTF TRNGCOM, CA	43.79
Nellis AFB, NV	43.57
Hill AFB, UT	42.96
COMNAVAIRWARCENACDIV, Patuxent River, MD	42.50
Luke AFB (Goldwater), AZ	41.70
Fort Hood, TX	41.69
FACSFAC Jacksonville, FL	41.68
Fort Knox, TN	41.01
NAVUNSEAWARCENDIV Keyport, WA	40.54
Fort Drum, NY	40.35
Edwards AFB, CA	40.30
Fort Bragg, NC	38.86
Fort Stewart, GA	38.42
Cannon AFB, NM	38.37
NTC and Fort Irwin, CA	38.31
NAS Key West, FL	36.41
Fort Rucker, AL	36.37
Fort A P Hill, VA	35.00
Fort Sill, OK	34.92
CG MCB Quantico, VA	34.69
NAS Pensacola, FL	34.03
Key Field, MS	33.98
Shaw AFB, SC	33.82
NAVSURFWARCEN, COASTSYSSTA Panama City, FL	33.47
Fort Huachuca, AZ	33.13
Buckley AFB, CO	33.05
Selridge ANGB, MI	32.78
Fort Campbell, KY	32.49
Hancock Field AGS, NY	32.33
Fort Sam Houston, TX	32.25
Fort Riley, KS	32.18
MCAS Beaufort, SC	32.17
Hulman Regional APT AGS, IN	31.91
Carswell ARS, NAS Fort Worth Joint Reserve, TX	31.69
Schofield Barracks, HI	31.67
Aberdeen Proving Ground, MD	31.64
McConnell AFB, KS	31.16
Fort Eustis, VA	31.03
Fort Richardson, TX	30.77
CG MCAS Cherry Pt, NC	30.37
Fort Dix, NJ	29.11
Fort Leonard Wood, MO	28.83
COMNAVSPECWARGRU One, CA	28.71
COMSUBFORPAC Pearl Harbor, HI	28.63
NAS JRB Ft Worth, TX	28.56
Fort Benning, GA	28.41
CG MCB Hawaii	28.01
NAS Kingsville, TX	27.68
Seymour Johnson AFB, NC	27.51
Fort Gordon, GA	27.49
Fort McCoy, WI	27.09
Vandenberg AFB, CA	27.02

Education and Training JCSG	
Range and Collective Training Subgroup	
Mountain Home AFB. ID	26.77
Eielson AFB. AK	26.45
COMSTRKFIGHTWINGPAC Lemoore. CA	26.13
COMNAVSPECWARCEN. CA	25.96
Holloman AFB. NM	24.85
Atlantic City IAP AGS. NJ	24.02
Kirtland AFB. NM	23.57
MCMWTC Bridgeport. CT	23.49
Barksdale AFB. LA	23.33
NAS Whiting Field Milton. FL	23.23
Fort Jackson. SC	23.04
NAS Meridian. MS	22.94
COMSUBLANT Norfolk. VA	22.71
Lambert - St. Louis IAP AGS. MO	22.48
Harrisburg IAP AGS. PA	22.34
NAS Corpus Christi. TX	21.58
Moody AFB. GA	21.26
Redstone Arsenal. WA	20.95
Fort Smith Regional Apt AGS. AR	19.10
FCTCLANT. Dam Neck. VA	18.59
McChord AFB. WA	16.93
NAVSURFWARCENDIV Dahlgren. VA	16.75
Elmendorf AFB. AK	16.70
Tucson IAP AGS. AZ	16.70
NAS New Orleans ARS. LA	16.09
Klamath Falls IAP AGS. PA	15.14
Offutt AFB. NE	14.34
Davis-Monthan AFB. AZ	14.12
Whiteman AFB. MO	13.84
DULUTH IAP AGS. MN	13.73
Laughlin AFB. TX	13.30
Vance AFB. OK	13.20
Columbus AFB. MS	13.14
Ellsworth AFB. SD	13.12
NAS Atlanta. GA	13.01
Tyndall AFB. FL	12.97
Langley AFB. VA	12.88
Great Falls IAP AGS. MT	12.55
Pope AFB. NC	12.00
Ellington Field AGS. TX	11.87
Boise Air Terminal AGS. ID	11.85
Dane County Regional. Truax Field AGS. WI	11.20
Hawthorne Army Depot. NV	10.91
Rome Laboratory. NY	10.87
Dyess AFB. TX	10.69
Des Moines IAP AGS. IA	10.49
Springfield-Beckley MPT AGS. OH	10.10
Sheppard AFB. TX	10.04
Beale AFB. CA	9.24
Sioux Gateway APT AGS. IA	9.23
Capital APT AGS. IL	9.22
Randolph AFB. TX	9.17
Joe Foss Field AGS. SD	9.16
Fort Wayne IAP AGS. IN	9.14
Dannelly Field AGS. AL	9.13
West Point Mil Reservation. NY	8.97
Anniston Army Depot. AL	8.80
Lincoln Map AGS. NE	8.72
Bradley IAP AGS. CT	8.72
Tulsa IAP AGS. OK	8.71
W. K. Kellogg APT AGS. MI	8.66
Barnes MPT AGS	8.63

During the initial BRAC Data Calls, Otis was asked to answer the following questions regarding special use airspace.

Question 1.1202 was worded, “ If the installation schedules or controls a special use airspace or airspace for special use, complete the following table.”

Question 1.1203 was worded, “ If the installation schedules or controls a supersonic-capable special use airspace or airspace for special use, identify all supersonic airspace with the attributes in the following table.”

Otis responded N/A to both of these questions because we do not schedule or control our training airspace. This is significant because we answered the questions based on control rather than proximity and regular use. Otis schedules and uses the Narragansett Range Complex (W105) on a daily basis.

The Mission Compatibility Index listed two sub-areas under “Current/Future Mission”, 1) Operating Environment and 2) Geo-locational Factors. Five questions accounted for 46% of the overall MCI score.

Otis answered only one of five questions in the “Current/Future Mission” area during the BRAC Data Calls. The following questions were answered at a MAJCOM level. We do not know how these questions were answered or scored. The percentage to the right of the question equals the overall weighted score in the “Current / Future Mission” area.

1245 - Proximity to Airspace Supporting Mission (ASM)	22.08%
1246 - Proximity to Low Level Routes Supporting Mission	7.25%
1270 - Suitable Auxiliary Airfields within 50 NM	5.18%
1271 - Prevailing Installation Weather Conditions	5.52%

In a February 2004 Report to Congress, “Implementation of the DOD Training Range Comprehensive Plan”, the Department of Defense identified all U.S. military ranges and special use airspace, their controlling agencies and primary users. Not surprising, the report indicates that FAA is the controlling agency for all ranges and special use airspace. Otis falls into the same category as 99% of every other Air National Guard Base for control and use of airspace. What is unclear is if we were graded the same way as other Air National Guard Units with regard to Joint Use, Airspace and Military Value.

Narragansett Bay Complex

The Narragansett Bay Complex is located in the waters adjacent to the coasts of Massachusetts, Rhode Island and Long Island, New York. It is controlled by the Fleet Area Control and Surveillance Facility, Virginia Capes (FACSFAC VACAPES) Naval Air Station (NAS) Oceana.

The complex is composed of the following non-instrumented warning areas and Operating Area (OPAREA):

- Warning Area 105 (W-105)
- Warning Area 106 (W-106)
- Narragansett Bay OPAREA

W-105/W-106/NBOA areas are scheduled for optimum use by apportioning areas for specific users and types of exercises.

The Narragansett Bay OPAREA is an exercise/operating area off Massachusetts, Rhode Island, and New York coasts. It overlaps W-105, W-106, and submarine transit lanes, extending approximately 100 NMI south, and east approximately 220 NMI. The area extends from surface to ocean bottom, and is used for surface and subsurface exercises.

The NBOA surface operating areas are located off the coast of Long Island and Narragansett Bay. These areas are numerically separated into lettered sub areas. Submarine operations are normally conducted in areas 1 through 3 and 6 through 20.

Warning Area 105 (W-105) W-105 is special-use airspace over the Narragansett Bay OPAREA-Areas 2-13, 22, 23, 25, 26 and 28 and is located approximately 75 Nautical Miles (NMI) southeast of the NAS South Weymouth TACAN, Channel 61, bearing 160°. W-105 is divided into five sub areas. W-105 floor/ceilings are as follows:

- W-105A&C Surface to FL500
- W-105B Surface to 17,999-feet
- W-105D Surface to 14,999-feet
- W-105E 15,000-feet to FL500

W-105 is used for surface-to-air gunnery exercises using conventional ordnance and Antisubmarine Warfare (ASW) exercises. Live firing of conventional ordnance is authorized in the northeastern and western portion of W-105. The airspace is also used for flight testing. Effective altitudes in W-105 are: W-105A/C, surface to FL500; W-105B, surface to 17,999 feet; W-105D, surface to 14,999 feet; W-105E, 15,000 feet to FL500.

The Warning Area 106 (W-106) is special-use airspace over the Narragansett Bay OPAREA-Areas 2, 21-25 and 27 and is located approximately 90 NMI from

the NAS Willow Grove TACAN, Channel 61, bearing 075°. W-106 is divided into four sub areas.

W-106 floor/ceilings are as follows:

W-106A Surface to 3000-feet MSL
W-106B Surface to 8000-feet MSL
W-106C Surface to 10000-feet MSL
W-106D Surface to 5,999-feet MSL

W-106 airspace is used for air-intercept training. No aviation ordnance is authorized. Effective altitudes within W-106 are: W-106A, surface to 3,000 feet; W-106B, surface to 8,000 feet; W-106C, surface to 10,000 feet; W-106D, surface to 5,999 feet.

Air operating Areas are designated as Special Operating Areas (SOAs) and are listed as follows: W-106A/ B/C/D, W-105B and W-105A/C/D/E which were subdivided into areas AIR-A/B/C/D/E/F/G. AIR-A through AIR-G were implemented in December 1996 and are not currently listed on DMA/DOD Charts. Updates/changes will be reflected in future publications. When requesting/utilizing Special Operating Areas in W-105A/C/D/E, refer to using AIR-A through AIR-G designations.



United States Department of Defense

Report to the Congress

Implementation of the Department of Defense Training Range Comprehensive Plan

*Ensuring Training Ranges
Support Training Requirements*

Submitted by
The Office of the Secretary of Defense
Under Secretary of Defense
(Personnel and Readiness)

February 2004

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EXECUTIVE SUMMARY

Introduction

Purpose

The Department of Defense (DoD) is submitting this report to explain its plans for addressing training constraints caused by encroachment – limitations on the use of military lands, marine areas, and airspace for military training. The report documents requirements for training ranges, the adequacy of DoD resources to meet requirements, and plans for addressing gaps between the two. This report also presents an inventory of DoD operational range complexes.

DoD is providing this report in response to Section 366 of the National Defense Authorization Act for Fiscal Year (FY) 2003 (Public Law 107-314), which requires the Department to report on these and related topics (see Appendix A). This report also serves as the interim report required by paragraph (e)(1) of Section 320 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136, see Appendix B). Because of similarity in their scope and content, DoD plans to submit a series of single reports that respond to the requirements of both Sections in the years when the reports are due. This first report will provide a foundation for future reports for Sections 366 and 320.

Background

Encroachment pressures – such as private development adjacent to ranges, restrictions imposed by environmental regulation, or growing competition for airspace and frequency spectrum – are increasingly impeding DoD's ability to conduct unit training in realistic environments. These pressures limit low-altitude flight training, over-the-beach operations, night and all-weather training, live-fire training, maneuver training, the application of new weapon technologies, and other military activities.

Sections 366 and 320 reflect long-standing Congressional interest in training, range complexes, encroachment, and readiness. Most recently, Congressional attention has focused on DoD's Readiness and Range Preservation Initiative (RRPI). RRPI began with eight provisions that constitute a combination of narrowly focused measures to enhance the readiness of our forces, while maintaining our commitment to environmental stewardship. Five of the eight RRPI provisions have been enacted into law.

Sections 366 and 320's requirements coincide with the Department's efforts to transform training to meet current and anticipated operational requirements. This report reflects the DoD's joint emphasis for training transformation. Section 366 and 320's requirements also coincide with the Department's Sustainable Ranges Initiative. This initiative includes policy, organization, leadership, programming, outreach, legislative clarification, and a suite of internal changes to foster range sustainment.

The Department is taking a proactive role in developing programs to protect facilities from urbanization, and working with states and nongovernmental organizations to promote compatible land usage. The sustainable ranges outreach effort provides stakeholders with an improved understanding of readiness needs, address concerns of state and local governments and surrounding communities, work with nongovernmental organizations on areas of common interest, and to partner with groups outside the Department to reach common goals. Where possible, the Department is working with other Federal agencies and state agencies to develop administrative and regulatory solutions to encroachment pressures.

Each of the Military Services has an active sustainable ranges program. These are described in detail throughout this report.

Overview

Ensuring the readiness of the Armed Forces is one of the Department's most important tasks. No factor makes a more important contribution to readiness than realistic training conducted at dedicated range complexes, ocean operating areas, and in special use airspace (SUA). Our operational training range complexes provide realism, variety, flexibility, specialized training equipment and instrumentation, and safety for the military and the public. They maximize our ability to train as we fight.

In this report, the term "range complex" is defined in slightly different terms for each Armed Service. Army and Marine Corps range complexes are typically defined as installations with more than one type of range. In essence, most Army and Marine Corps range complexes represent the range portions of the larger Army and Marine Corps installations. Navy range complexes are regional groupings of various land, air, and sea ranges. Air Force range complexes are defined as the airspace and land area, with a focus in this year's report on air-to-ground training. In all cases, the phrase "range complex" refers to operational range complexes.

Context

Today, the Department faces a paradox when it comes to the air, land, water, and electromagnetic spectrum required to support realistic training. On one hand, our platforms, weapons, and systems are growing ever more capable, which, when combined with the attendant advancements in doctrine and tactics, create requirements for *more* training space. On the other hand, encroachment reduces the size of the area that is available for military training – sometimes markedly so.

Simulations and simulators currently play important roles in DoD training, but they cannot replace essential live training, especially combined arms and joint training. They will not significantly resolve encroachment problems, at least in the near-term future.

DoD is committed to be a responsible steward of the natural and cultural resources entrusted to its care. Yet encroachment on our test and training ranges has become a significant impediment, and the effects will only worsen unless appropriate action is taken.

Current and Future Training Requirements

Training Requirements

The Military Services develop their training requirements using broadly similar, though not identical, frameworks. The framework begins with an assessment of the National Security Strategy of the United States, the global security environment, weapons and related systems that are available today and that are expected to be available in the near future, and the lessons learned from previous military experience, training evolutions, and experimentation. Out of this assessment, the Services determine how they will operate in combat in the near term future. From their planned operations, the Services identify mission essential tasks. Joint mission essential tasks augment Service-unique tasks. The Services then develop training plans and capabilities to ensure that their forces are proficient in executing the mission essential tasks.

Operational Training that Requires Ranges and Operating Areas

Many DoD training activities require access to ranges, SUA, and ocean operating areas. As a general principle, the larger the unit involved in the training activity, the larger the required training area. The development of the Joint National Training Capability (JNTC) reinforces the Department's requirements for range complexes, SUA, and ocean operating areas. Developing and maintaining a well-trained, integrated joint force requires exercising and coordinating these forces in live training at our range complexes and operating areas, augmented with virtual and constructive simulations.

Command Relationships for Ranges and Range Complexes

The Military Services require ranges and range complexes to train military personnel in realistic settings for the spectrum of military operations. The Military Services, therefore, have historically managed range complexes and related issues. This approach is consistent with Title 10 of the United States Code, under which the Military Services are primarily responsible for construction, repair, and maintenance of installations, subject to the authority, direction, and control of the Secretary of Defense. The Department has taken steps to ensure sound management, implementation and coordination of sustainable range responsibilities at the level of the Office of the Secretary of Defense (OSD) and within the Armed Services. The Senior Readiness Oversight Council (SROC) reviews range sustainment policies and issues. An Integrated Product Team (IPT) reports to the SROC and acts as the DoD coordinating body for developing strategy to preserve the military's ability to train. A Working IPT meets regularly and reports to the IPT. DoD Directive 3200.15 provides guidance and assigns responsibilities related to sustaining ranges and operating areas.

Current Range Requirements Derived from Training Requirements

Each of the Military Services has a structured process for identifying range requirements that arise from training requirements. The Army uses its Range and Training Land Program (RTLTP) process to plan, estimate, and program for the live training facilities (ranges and maneuver/training area) needed to meet its live training requirements. Navy range requirements ensure training ranges provide sufficient land, airspace, sea space, and frequency spectrum to complete Interdeployment Readiness Cycle (IDRC) training before Navy forces deploy from their home bases. The Marine Corps requires access to ranges, training areas and airspace that is sufficient to support training to standards across the training continuum. The Air Force groups its range complexes into three categories: Primary Training Ranges, Combat Training Centers and Combat Readiness Training Centers, and the Major Range and Test Facility Base. These categories reflect the different types of ranges that are required to meet Air Force training requirements.

Future Projections

The Military Services are anticipating their future training requirements. The Army is planning, programming, and implementing necessary range modernization to accommodate the transformation of six current force units to STRYKER Brigade Combat Teams (SBCTs). The vision of Army training in 2010 is a networked organization engineered to meet institutional, unit, and modernization training needs for the Army. The Army has begun to develop training requirements for the Future Force (FF) for 2015 and beyond. Navy training ranges will continue to play a critical role in supporting IDRC training for operational forces. Strategic planning for Navy range complexes will include future training operations derived from new Naval platforms and weapons, as well as improvements to infrastructure to support the JNTC. The Marine Corps training and education continuum will evolve to meet diverse and changing operational needs due to future tactics, techniques, and procedures, and training requirements are evolving

to leverage new capabilities. The Air Force develops mission action plans to identify future training requirements in response to changes in air power doctrine and the introduction of new weapons.

Service Range Inventory

DoD Operational Range Inventory

Appendix E provides maps and an inventory of DoD range complexes, individual ranges not in complexes, and special use airspace. The inventory draws from the databases and inventories that the Military Services use for the management of range complexes, installations, airspace, and operating areas. We plan to build on the Military Services' existing range inventories and management information systems to fully support the joint training and warfighting reflected in our Training Transformation efforts, while continuing to meet Service-specific requirements.

Range Capacities and Capabilities

The Department is collecting data and conducting analyses on the capacities and capabilities of all DoD installations, including training ranges, for the 2005 round of military base realignments and closures (BRAC 2005). This report addresses range capacity using a variety of data sources and methods currently available. As DoD proceeds in the BRAC 2005 process through May 2005, it may develop new data sources and methods to measure, analyze, and report range capacity. Accordingly, BRAC 2005 analyses of range capacity may reflect information, metrics, analytical methods, and conclusions that could vary from those presented in this report.

The Department's range complexes, SUA, and ocean operating areas provide a wide variety of capabilities to support military training requirements. The capabilities offered by our range complexes allow all of our military forces to train for all of their assigned operational missions. For example, ground forces can train in operational maneuver; air forces can train for air-to-air, air-to-ground, and other missions; and naval forces can train for strike and anti-surface, anti-submarine, anti-air, and amphibious warfare. Special forces can train to practice their missions. All forces can receive essential live fire training in safe conditions and train for command, control, communications, and intelligence tasks. Forces can train jointly to prepare for joint operations. Capacities and capabilities are addressed in detail in the main body of this report.

Encroachment

DoD is focusing its efforts on encroachment in 11 issue areas: endangered species and critical habitat; cultural resources; unexploded ordnance and munitions; frequency spectrum; maritime sustainability; air- and land-space restrictions; air quality; clean water; wetlands; airborne noise; and urban growth. Reports from the General Accounting Office (GAO) and others have documented the significant limitations on training that each of these factors can pose. The Department is grateful for the support that it has received from the Congress, the states, Native American tribes, non-governmental organizations, and others to address these issues.

Training Constraints and Impact Factors

Recent experience at DoD range complexes indicates that encroachment degrades training in the following ways: creates avoidance areas; reduces usage days; prohibits certain training events; reduces range access; segments training and reduces realism; limits new technologies; restricts flight altitudes;

inhibits new tactics development; complicates night and all weather training; reduces live fire proficiency; increases personnel tempo; and increases costs and risks. Realistic military training will continue to require substantial amounts of airspace, land, water, and frequency spectrum, and encroachment issues will challenge DoD for many years to come.

Adequacy of Current and Future Service Range Resources

Assessing range adequacy is a complex undertaking. It requires the identification, collection, and analysis of a wide variety of data on factors such as training requirements, capacity, capabilities, encroachment, location, and access. The assessment must consider and balance these and other factors, such as the need to allocate training resources between Service-unique and joint training requirements.

Although the Department has many concerns about range adequacy, in general our range complexes in the United States allow military forces to accomplish most of their current training missions. In general, constraints at overseas range complexes pose more difficult encroachment and training challenges, a finding consistent with a recent GAO audit.

Today and in the future, many factors threaten the adequacy of our range complexes, including: encroachment factors and impacts; the growing need for military forces to train in combined arms and joint operations, especially in large multi-echelon exercises; the need to sustain, restore, and modernize range infrastructure; and new weapon systems and technologies.

The fact that our ranges are generally adequate today is a testament to the cooperation the Department has received from the Congress and many states, Native American tribes, local governments, and nongovernmental organizations. It is also a testament to the dedication of our military and civilian personnel, who have worked hard to ensure that military forces can accomplish their training missions in the face of substantial limitations resulting from encroachment and other obstacles.

In the future, the adequacy of our range complexes will erode without substantial efforts to address encroachment, adequate investments in our training range infrastructure, robust range sustainment programs, and the continued cooperation of others. The main body of this report contains more information about the adequacy of range resources for each of the Military Services.

Comprehensive Plans to Address Range Constraints

The Department is developing and implementing comprehensive plans to address training constraints. The Military Services are developing and implementing comprehensive plans that best meet their needs, while ensuring an appropriate amount of consistency across the Department.

DoD Directive 3200.15, "Sustainment of Ranges and Operating Areas," establishes requirements for comprehensive and integrated planning for the sustainment of range complexes and operating areas. The Directive requires the Under Secretary of Defense for Personnel and Readiness to provide guidance and oversight, and the Military Services and other DoD Components to prepare management plans for range complexes and ocean operating areas (OPAREAs). Conducting outreach to promote range sustainment and resolve encroachment issues is a key element of DoD policy and the range management plans.

The Military Services are carrying out the planning required by the Directive. Each Service is implementing a planning process that is best suited to its requirements and ranges. Although the specific approaches differ, the general characteristics of the Service planning processes are similar. The planning processes establish Service-level program priorities and require detailed, structured reviews of individual

installations, range complexes, and OPAREAs. The intensive reviews are carried out in a phased approach. The Services are defining investment priorities for sustainment, modernization, and other range related issues on the basis of the programmatic reviews and assessments of individual range complexes and OPAREAs.

Observations

The transformation of our military forces is driving many changes in the Department of Defense. As we implement these changes, however, some of our basic tenets remain constant. To provide ready military forces to meet our country's national security needs, our personnel must train as they would fight. This is especially true for combined arms and joint training. To train as we would fight requires reliable access to adequate land, air, sea space, and frequency spectrum resources. Today, encroachment effectively reduces the amount of these resources that the Department has to support essential military training.

And while predicting the future can be an uncertain business, all indicators point in the same direction: tomorrow's encroachment problems will be substantially worse than today's without effective management and broad cooperation. As our weapon systems grow in capability, they detect at greater distances, travel faster, cover wider areas, and process more information. These trends suggest training needs for more land area, airspace, sea space, and frequency spectrum. At the same time encroachment diminishes the availability of these resources.

The Department will continue to work with the Congress, other federal agencies, the states, Native American tribes, local governments, host nations abroad, and non-governmental organizations to address today's encroachment problems and prevent them from getting worse. The Department is grateful for the support that the Congress has provided thus far on the Readiness and Range Preservation Initiative, and we look forward to continuing to work with the Congress on the remaining RRPI items.

1. INTRODUCTION

1.1. Purpose

The Department of Defense (DoD) is submitting this report to explain its plans for addressing training constraints caused by encroachment – limitations on the use of military lands, marine areas, and airspace for military training. The report documents requirements for training ranges, the adequacy of DoD resources to meet requirements, and plans for addressing gaps between the two. This report also presents an inventory of DoD operational range complexes.

DoD is providing this report in response to Section 366 of the National Defense Authorization Act for Fiscal Year (FY) 2003 (Public Law 107-314), which requires the Department to report on these and related topics (see Appendix A). This report also serves as the interim report required by paragraph (e)(1) of Section 320 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136, see Appendix B).

This report addresses Section 366's requirement for the submission of a report with the President's budget for FY 2005. Section 366 requires the Department to provide updated reports with the President's budget for FYs 2006 through 2008. Section 320 requires this interim report and subsequent annual reports in January 2006 through January 2010. Because of similarity in their scope and content, the Department plans to submit a series of single reports that respond to the requirements of both Sections in the years when the reports are due. This first report will provide a foundation for future reports for Sections 366 and 320.

1.2. Background

Specifically, Section 366 requires the Department to assess current and future training range requirements and the ability of current DoD resources to meet them. It calls for a report on implementation of training range inventories and the development of comprehensive plans to address operational constraints caused by limitations on the use of air, land, and sea resources, including proposals to enhance training range capabilities, goals and milestones for planned actions, and projected funding requirements. It also requires the designation of officials with lead implementation responsibilities.

Section 320 requires the Department to conduct a study of encroachment impacts on military installations and operational ranges, focusing on safety and operational buffer areas and compliance with three key environmental laws: the Clean Air Act, the Solid Waste Disposal Act, and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Section 320 also requires plans to respond to encroachment issues.

Encroachment pressures – such as private development adjacent to ranges, restrictions imposed by environmental regulation, or growing competition for airspace and frequency spectrum – are increasingly impeding DoD's ability to conduct unit training in realistic environments. These pressures limit low-altitude flight training, over-the-beach operations, night and all-weather training, live-fire training, maneuver training, the application of new weapon technologies, and other military activities.

Sections 366 and 320 reflect long-standing Congressional interest in training, range complexes, encroachment, and readiness. Most recently, Congressional attention has focused on the Department's Readiness and Range Preservation Initiative (RRPI). RRPI began with eight provisions that constitute a combination of narrowly focused measures to enhance the readiness of our forces, while maintaining our commitment to environmental stewardship. Five of the eight RRPI provisions have been enacted into

law. Recent reports by the General Accounting Office (GAO) also address encroachment and training ranges in the United States and overseas.¹

1.2.1. Training Transformation

Sections 366 and 320's requirements coincide with the Department's efforts to transform training to meet current and anticipated operational requirements. Increasing joint training is a high priority for this transformation. Our military successes in Operations Iraqi Freedom, Enduring Freedom, Noble Eagle, Allied Force, and Desert Storm are due in part to our ability to operate effectively as an integrated joint force. To operate as a joint force, we must train as a joint force.

The Department's Strategic Plan for Transforming DoD Training, the associated Training Transformation Implementation Plan, and the establishment of the Joint National Training Capability (JNTC) all stress the need to enhance the "joint" focus of military training. The Department is expanding the definition of "jointness" to include interagency, intergovernmental, multinational, and coalition partners because of the important role that other U.S. agencies, foreign governments, multinational organizations, and coalition partners play in contemporary military operations. Our goal is to ensure that training prepares military forces for actual operations, where combatant commanders will deploy them in a joint context based on their capabilities. The recent GAO reports cited above also highlight the importance of joint service approaches to training range sustainment and management. This report reflects the Department's joint emphasis for training transformation.

1.2.2. Sustainable Ranges Initiative

Section 366 and 320 requirements also coincide with DoD's Sustainable Ranges Initiative. This initiative includes policy, organization, leadership, programming, outreach, legislative clarification, and a suite of internal changes to foster range sustainment. New policy directives promote a long-range, sustainable approach to range management. The Department is taking a proactive role in developing programs to protect facilities from urbanization, and working with states and nongovernmental organizations to promote compatible land usage. The sustainable ranges outreach effort provides stakeholders with an improved understanding of readiness needs, address concerns of state and local governments and surrounding communities, work with nongovernmental organizations on areas of common interest, and to partner with groups outside the Department to reach common goals. Where possible, the Department is working with other Federal agencies and state agencies to develop administrative and regulatory solutions to encroachment pressures.

Each of the Military Services has an active sustainable ranges program.² These are described in detail throughout this report.

¹ **Military Training: DOD Lacks a Comprehensive Plan to Manage Encroachment on Training Ranges.** GAO 02-614, June 11, 2002; and **Military Training: Limitations Exist Overseas but Are Not Reflected in Readiness Reporting.** GAO 02-525, April 30, 2002.

² Other encroachment-related initiatives are being undertaken. For example, the Range Commander's Council sponsors groups on sustainability and environment that address encroachment issues.

1.3. Overview

Ensuring the readiness of the Armed Forces is one of the Department's most important tasks. The **Department of Defense Dictionary of Military Terms** defines readiness as:

“The ability of US military forces to fight and meet the demands of the national military strategy. Readiness is the synthesis of two distinct but interrelated levels. a. unit readiness—The ability to provide capabilities required by the combatant commanders to execute their assigned missions. This is derived from the ability of each unit to deliver the outputs for which it was designed. b. joint readiness—The combatant commander's ability to integrate and synchronize ready combat and support forces to execute his or her assigned missions.”

Readiness is a primary building block of our nation's national security strategy. To defend the United States effectively, our military must assure our allies and friends; dissuade future military competition; deter threats against U.S. interests, allies, and friends; and decisively defeat any adversary if deterrence fails.

Ready military forces contribute to each of these tasks by:

- assuring our allies that U.S. military power will be highly effective and available in a timely manner.
- dissuading potential competitors by denying capability gaps that can be exploited.
- deterring potential adversaries by enabling our ability to deliver rapid, accurate, lethal, and overwhelming military power.
- delivering effective warfighting capabilities to decisively defeat any adversary across the spectrum of conflict.

Many factors contribute to the readiness of our forces, such as the outstanding quality of our personnel, exceptional leadership, modern equipment, sufficient ordnance and spare parts, adequate installation and industrial base infrastructure, strong quality of life programs, and effective education and training.

Of these factors, none is more important than realistic training conducted at dedicated range complexes, ocean operating areas, and in special use airspace (SUA). Realistic training develops individual skills and unit capabilities; helps forces prepare to defeat enemy tactics and systems; helps forces assimilate lessons learned from actual military experience, experimentation, and previous training exercises; facilitates continuous improvement of doctrine, organization, tactics, and equipment; and builds confidence and morale. Rigorous and realistic training also helps the Department meet its obligation to the American people to ensure our troops go into harm's way with the highest possible assurance of success and survival. At their best, our training range complexes provide realism, variety, flexibility, specialized training equipment, and instrumentation. They also provide safety for the military and the public.

In this report, the term “range complex” is defined in slightly different terms for each Armed Service. Army and Marine Corps range complexes are typically defined as installations with more than one type of range. In essence, most Army and Marine Corps range complexes represent the range portions of the larger Army and Marine Corps installations. Navy range complexes are regional groupings of various land, air, and sea ranges. Air Force range complexes are defined as the airspace and land area, with a focus in this year's report on air-to-ground training. In all cases, the phrase “range complex” refers to operational range complexes.

Realistic training maximizes our ability to train as we fight. The benefits of this approach are well documented. The 2001 report by the Defense Science Board Task Force on Training Superiority and Training Surprise offers a typical view. The report concluded that as a result of realistic training at the Department's combat training centers (CTCs), "Trainees are far better prepared for combat than forces trained by other methods."³

1.4. Context

Today, the Department faces a paradox when it comes to the air, land, water, and electromagnetic spectrum required to support realistic training. On one hand, our platforms, weapons, and systems are growing ever more capable, which, when combined with the attendant advancements in doctrine and tactics, create requirements for *more* training space. Aircraft and vehicles travel farther and faster. Sensors detect at longer distances. Platforms deliver weapons accurately at greater distances. Unmanned vehicles provide invaluable intelligence. Communications systems carry more data to provide unprecedented intelligence and enable extensive coordination. These changes have brought about not only an overall increase in our military capabilities, but also a vast increase in the size of the battlespace within which we operate, and, therefore, within which we must train.⁴

On the other hand, encroachment reduces the size of the area that is available for military training – sometimes markedly so. Urban and regional development have brought communities near or next to once remote installation boundaries, bringing residents with concerns about noise and safety, and forcing species, endangered and otherwise, to seek refuge in the only natural terrain available nearby – the very terrain that military forces need for realistic training. Environmental regulations limit training across the spectrum of military activities, from amphibious assaults to anti-submarine warfare, from maneuver on land to low level flight. Commercial air traffic competes for the SUA needed for military training. Developers want to build new communities below airspace used historically for military training. A host of new commercial communications products compete for portions of the electromagnetic spectrum currently or formerly used by the military.

In short, our requirements for training space are increasing, but the air, land, water, and spectrum resources we need to conduct training are shrinking.

1.4.1. Simulation

While simulations and simulators currently play important roles in DoD training, they cannot replace essential live training, especially combined arms and joint training. A recent RAND Corporation study documents the complex relationship between live and simulated training.⁵ The study finds that acceptance and use of simulated training varies greatly for different training tasks, and that factors such as simulators' quality, fidelity, and availability determine their acceptance and usefulness for different military training requirements.⁶

³ *Report of the Defense Science Board Task Force on Training Superiority and Training Surprise*. Washington, DC: January 2001, p. 15.

⁴ For example, a typical Army brigade today operates over an area that is more than 30 times larger than in World War II. See *Army Vision for Sustainable Range Management*, 7 December 2000, presented at Army Worldwide Energy and Environment Conference (derived from page 2).

⁵ John F. Shank, Harry J. Thie, Clifford M. Graf II, Joseph Beel, and Jerry Sollinger, *Finding the Right Balance: Simulator and Live Training for Navy Units*. Santa Monica: RAND Corporation, 2002.

⁶ *Ibid.*, p. 68.

The essential points for this report on Sections 366 and 320 are as follows:

- Simulators can and do enhance and augment live training, and substitute for it in a limited number of cases.
- The current generation of simulators lacks the quality, fidelity, and overall capability to replace substantially more of today's live training.

The Department concludes that increased use of simulation will not resolve encroachment problems, at least for the foreseeable future. Live training at range complexes will remain an essential cornerstone of military training.

1.4.2. Stewardship and Training

The Department is a committed steward of the natural and cultural resources entrusted to its care. Yet encroachment on our test and training ranges has become a significant impediment, and the effects will only worsen unless appropriate action is taken. DoD's Sustainable Range Initiative responds to the numerous encroachment pressures, with an emphasis on outreach and 8 critical encroachment issue areas: (1) Endangered Species Act, (2) unexploded ordnance and other constituents, (3) frequency encroachment, (4) maritime sustainability, (5) air- and land- space restrictions, (6) air quality, (7) airborne noise, and (8) urban growth. This report is, in part, an update on these efforts.

1.5. Scope

The remainder of this report provides greater detail on the topics briefly covered in this introduction. Chapter 2 addresses current and future training requirements. Chapter 3 addresses the requirements related to the Military Services' range inventories and encroachment. Chapter 4 discusses the adequacy of current and future training range resources. Chapter 5 contains the Department's comprehensive plans to address training constraints. Chapter 6 concludes with observations and recommendations.

2. CURRENT AND FUTURE TRAINING REQUIREMENTS

The Department of Defense operates the largest and most diverse training enterprise in the world to support its 3.2 million uniformed and civilian personnel, operating from more than 6,000 locations, using more than 30 million acres of land, in 146 countries. We provide entry-level qualification training to about 200,000 new soldiers, sailors, marines, and airmen each year. We also provide specialized skill training, beyond that acquired in basic training, to develop expertise for specific job requirements. We teach leadership skills for military units of every size, from small groups to large joint combat task forces, and provide professional development education to our noncommissioned and commissioned officers. Military training and education cover an astounding variety of subjects, from basic weapons familiarization to advanced operational art for effective employment of joint combat forces.

The National Security Strategy of the United States directs the major institutions of American national security to transform to meet the challenges of the Twenty-First Century. The Department has fully embraced this direction. Our experiences in Afghanistan and Iraq reinforce the need to transform training to better enable joint operations against an often-unknown threat. Today we deploy our forces to combatant commands for employment in joint operations. We therefore must train as we fight—jointly.

The Congress has helped the Department foster jointness in the past by codifying direction in public law, for example, in various sections of Title 10 of the United States Code:

- Section 153 states that “subject to the authority, direction, and control of the President and the Secretary of Defense, the Chairman of the Joint Chiefs of Staff is responsible for developing doctrine for the joint employment of the Armed Forces, formulating policies for the joint training of the Armed Force, and formulating policies for coordinating the military education and training of members of the Armed Forces.”
- Section 164(c) outlines the authority of combatant commanders, and includes among these, “giving authoritative direction to subordinate commands and forces necessary to carry out missions assigned to the command, including authoritative direction over all aspects of military operations, joint training, and logistics.”
- Section 165(b) states that, “subject to the authority, direction, and control of the Secretary of Defense and subject to the authority of the combatant commands (under 164(c)), the Secretary of the Military Department is responsible for the administration and support of forces assigned by him to a combatant command.”
- Additional Military Service training responsibilities are fixed in the individual Service sections of Title 10. Specifically, 10 USC 3013(b), 5013(b), and 8013(b) task the Secretaries with recruiting, organizing, training, and equipping the forces assigned to the combatant commands.

U.S. Joint Forces Command has been assigned the task of serving as the joint force provider and joint force trainer in the Unified Command Plan. The Secretary of Defense has also directed the command to serve as the lead agent for joint force transformation, the Joint National Training Capability, and for joint experimentation. The Service Components in the United States are assigned principally to Joint Forces Command for joint training subsequent to assignment to and utilization by other combatant commands. Therefore, all joint training requirements are based upon the entire range of combatant command missions. These joint training requirements and capabilities flow from the Joint Mission-Essential Task Lists (JMETLs) selected by the combatant commanders from the Universal Joint Task List.

In the Joint Training Manual for the Armed Forces of the United States, the Chairman of the Joint Chiefs of Staff has issued guidance to the combatant commands and their service components, Military Services, Combat Support Agencies, and Defense Agencies for developing JMETLs, planning and conducting joint training, and assessing command readiness with regard to joint training. The Military Services then develop training plans and capabilities to ensure that their forces are proficient in executing these mission essential tasks within their respective core competencies.

The Military Services maintain a comprehensive set of processes to develop, document, and execute current training requirements. These processes, which are described in greater detail below, typically link current training requirements to a standard training curriculum, which is based in turn on joint and Service-unique mission essential tasks. A wide variety of publications, such as doctrinal reports, guidance documents, instructions, and annual messages or updates, prescribe these processes thoroughly and precisely.

As the subsequent sections of this report demonstrate, encroachment limits the Department's ability to meet current Service core and joint training requirements. In some cases, encroachment prevents military forces from training to the standards established in these documents for current training requirements. In others, the Military Services are able to meet their established requirements for current training, but encroachment increases costs, reduces realism, forces practices in training that must be "un-learned" for actual combat operations, and segments training for multiple tasks, which degrades the quality of individual training evolutions.

Future joint training requirements can be grouped into two categories: near-term and long-term. Training requirements for the near-term future can be assessed with reasonable certainty because we can anticipate the near-term strategic environment, warfighting concepts, and technological capabilities with a reasonable certainty.

Indeed, DoD developed its Training Transformation Strategic and Implementation Plans precisely to address changing training requirements in the near-term future. These plans focus on improving joint knowledge development and distribution capability; establishing the Joint National Training Capability; and fostering the joint assessment and enabling capability for the continuous improvement of joint force readiness.

Over the long term, however, we have greater uncertainty about the strategic environment, warfighting concepts, and technologies, and, therefore, about the training that will be required to provide and maintain ready military forces.

With regard to encroachment in the long-term future, however, all of the trends and indicators point in the same direction: today's problems will worsen without appropriate action.

To meet long-term future training requirements, DoD will need at least as much in the way of air, land, water, and frequency spectrum resources as it uses today, and possibly more. In general, we will continue to maintain a decisive advantage over adversaries by being able to operate effectively during the day and at night, over greater distances, at greater speed, in all weather, with better intelligence, and with improved command, control, and communications. Training forces to become proficient in these advanced capabilities will likely increase requirements for airspace, land, sea area, and communications capacity.

The Department will continue to work collaboratively with other federal agencies, the Congress, the states, Native American tribes, local governments, host nations abroad, and nongovernmental

organizations to minimize the effects of encroachment on military training and readiness in the long-term future.

The next four sections discuss the training requirements of the Military Services.

2.1. Training Requirements

2.1.1. Army

The primary mission of the Department of the Army is to organize, train, equip, and provide forces for prompt and sustained combat on land, air, and in space. The Army deters potential adversaries, reassures allies and friends, and supports the nation at home.

Changes in the strategic environment and Army Transformation have important effects on training. From a strategic perspective, Army forces today use a “train, alert, and deploy” sequence. Maintaining forces that are ready now places increased emphasis on training. Due to political changes, advances in technology, and the Army’s role in executing the National Military Strategy, military operations in urban terrain have taken on new dimensions that previously did not exist, and more attention must be given to training in urban environments. Transformation also affects Army training. As the Army maintains the current force and begins to field new weapon systems to support the Future Force, Army ranges must evolve to meet the new requirements to ensure the force remains responsive, deployable, agile, versatile, lethal, survivable, and sustainable.

The Army Master Range Plan identifies the training land, management, operations, and support for range instrumentation, targetry, and device requirements for approved range projects and Army range modernization requirements. The Integrated Training Area Management (ITAM) Program provides the Army with the capability to manage and maintain training lands by integrating mission requirements derived from the Army’s Range and Training Land Program with environmental requirements and management practices.

Only live events require use of ranges and training land. Live fire training exercises to include Combined Arms Field training exercises, maneuver training, and battle drills must be conducted under conditions that replicate actual combat as close as possible. This is especially true at battalion level and below. Virtual and constructive training cannot replace live training. They can, however, supplement, enhance, and complement live training to sustain unit proficiency. Based on resource availability (such as time, ammunition, simulators, and range availability), commanders determine the right mix and frequency of live, virtual, and constructive training to ensure efficient use of allocated training resources.

2.1.2. Navy

Navy range requirements ensure training ranges provide sufficient land, airspace, sea space, and frequency spectrum to complete Interdeployment Readiness Cycle (IDRC) training before Navy forces deploy from their home bases. Under IDRC, basic (unit) level training ensures the unit attains the proficiency needed for more complex or integrated training events. Intermediate training is event-driven and provides initial multi-unit training under simulated threats, usually during the Composite Training Unit Exercise (COMTUEX). Advanced training offers unfolding “scenario-driven” training providing live tactical training in a realistic, coordinated environment, culminating in an integrated Joint Task Force Exercise (JTFEX).

2.1.3. Marine Corps

Title 10 responsibilities are the touchstone for Marine Corps training requirements and range and training area management planning. Under Title 10, the Marine Corps (1) develops landing force amphibious tactics, techniques and equipment, (2) organizes, trains and equips to provide combined arms Fleet Marine Forces, and (3) organizes, trains, and equips Marine Corps forces to conduct prompt and sustained sea combat operations, land, sea, air, and space operations essential to a naval campaign, and amphibious training of all forces assigned to joint amphibious operations.

As articulated in *Expeditionary Maneuver Warfare (EMW)*, (MCDP-1), EMW is the Marine Corps' capstone concept for developing tactics, forces, techniques and systems required by the operational context of the 21st Century. EMW operational concepts provide a roadmap for Marine Corps transformation. EMW capability requirements are driving development of weapons, systems, equipment and platforms; tactics, techniques, and procedures; and the training standards and associated range requirements. The Marine Corps' contribution to national security and its role within a naval expeditionary force rest upon five unique core competencies: (1) Warfighting Culture and Dynamic Decision-making, (2) Expeditionary Forward Operations, (3) Littoral Power Projection, (4) Combined Arms Integration, and (5) Forcible Entry from the Sea.

2.1.4. Air Force

The Air Force is the world's preeminent air power largely due to superior training of Air Force personnel. Air combat superiority is directly correlated with realistic training. The objective of realistic training of aircrews is to expose the warfighter to controlled training conditions that simulate combat as closely as possible, so that the experience of actual combat is not wholly unfamiliar. The effectiveness of the United States military's doctrine of realistic training is demonstrated by the dominance of the Air Force in every conflict in which it has been involved.

All air assets need properly configured and equipped ranges and airspace to practice a spectrum of skills, from the most basic to the most complex. The specific features of the training environment required for an aircrew to become skilled in a particular task differ greatly, including in the specific training objectives, the numbers and types of aircraft used, and the complexity of the interaction of different aircraft types in accomplishing a particular mission.

The Air Force training programs for aircrews uses a building-block approach, moving aircrews through six distinct types of training:

- **Undergraduate flying training.** Instructs aircrews in all aspects of basic flying proficiency.
- **Initial qualification training.** Provides instruction in the basic aircrew duties in an assigned position for a specific mission design series (MDS) for the aircraft to which the aircrew is assigned.
- **Mission qualification training.** Brings the aircrew through the point of being considered qualified to perform a command or unit mission.
- **Continuation training.** Provides aircrews with the recurrent training necessary to maintain proficiency at the assigned qualification level.
- **Special mission training.** Provides aircrews special skills required for specialized mission requirements.

- **Upgrade training.** Prepares the aircrew for advanced responsibilities, such as flight leader, instructor, or mission commander.

The types of training beyond basic levels differ in terms of complexity, goals, and number of participants, all of which influence the requirements for the ranges and training areas where the practical aspects of aircrew training are learned. Aircrew training is also viewed within the context of the operational concepts the training supports: readiness, deployment, employment, sustainment, redeployment, and reconstitution. This report focuses on mission qualification, continuing, and special mission training, involving employment, since these are the training stages that demand the most access to ranges.

The basis for aircrew training is the Ready Aircrew Program (RAP). The RAP is the source for specific information on the training requirements related to each MDS (i.e., aircraft type), including the number of sorties per training cycle, mission types flown, weapons employed, and other elements necessary for an aircrew to remain mission qualified. For each MDS aircraft, there are specific training requirements detailed in Series 11 Air Force publications.⁷ An annual message from Headquarters, Air Combat Command, Directorate of Training (HQ ACC/DOT) sets specific minimum training requirements for each MDS.

2.2. Operational Training that Requires Ranges and Operating Areas

Many DoD training activities require access to ranges, SUA, and ocean operating areas. As a general principle, the larger the unit involved in the training activity, the larger the required training area. This is easy to see at the extremes: a brigade level training exercise in a realistic combat environment requires vastly more area than individual training for proficiency in small arms.⁸

The development of the JNTC reinforces DoD's requirements for range complexes, SUA, and operating areas. The JNTC is being designed to enhance joint force training to reflect the fact that we routinely fight as joint forces under the combatant commanders. Warfighting success today and in the future depends on our ability to deploy a joint force with decisive, overmatching combat power. As Admiral Edmund P. Giambastiani, Jr., Commander of the Joint Forces Command, recently testified before the House Armed Services Committee regarding the lessons learned during operation Iraqi Freedom:

The fundamental point is that our traditional military planning and perhaps our entire approach to warfare has shifted. The main change, from our perspective, is that we are moving away from employing Service-centric forces that must be de-conflicted on the battlefield to achieve victories of attrition to a well-trained, integrated joint force that can enter the battlespace quickly and conduct decisive operations with both operational and strategic effects.⁹

Developing and maintaining a well-trained, integrated joint force requires exercising and coordinating these forces in live training at our range complexes and operating areas, augmented with virtual and constructive simulations. Advanced technologies will enable communication and coordination essential for the JNTC's mission success, but they cannot replace live training at our range complexes and in our

⁷ These Air Force publications can be accessed from the World Wide Web at <http://afpubs.hq.af.mil>.

⁸ There are exceptions. For example, pilots training for long range bombing, air refueling, or anti-submarine warfare missions need to fly long distances to complete their training missions.

⁹ Prepared statement by Admiral Edmund P. Giambastiani, Jr., Commander, United States Joint Forces Command and Supreme Allied Commander Transformation (NATO) before the House Armed Services Committee, United States House of Representatives, October 2, 2002, p. 4.

operating areas and SUA. Training that requires ranges and operating area is described in detail in the next sections.

2.2.1. Army

Training strategies prescribe the events and standards for achieving and sustaining individual, crew, and unit readiness. The two main Army training strategies are the Standards in Training Commission (STRAC) strategies and the Combined Arms Training Strategy (CATS). These two strategies are the basis of unit collective training. STRAC and CATS provide highly-detailed strategies, standards, and requirements for training different types of Army units, such as armor, infantry, artillery, etc. Commanders use events in the STRAC and CATS strategies to develop their unit training plan to achieve and sustain proficiency in mission essential task lists (METL) tasks, taking into account the frequency, duration, conditions and standards in the strategies.

Based on the Army's training strategies and mission training plans, unit commanders develop unit specific training strategies to achieve and sustain proficiency in METL tasks. These strategies drive requirements for resources needed to conduct live training, including ammunition, OPTEMPO funding, and ranges and training land.

2.2.2. Navy

The Navy conducts most of its training on designated ranges and OPAREAs located near concentrations of forces in the United States, its territories, and overseas. This arrangement allows Navy units to train in controlled environs for high-quality training and safety. Overseas, the Navy has limited range and OPAREA space available, but the Secretary of the Navy's "At-Sea Policy" provides guidelines for training outside of designated OPAREAs in international seas and airspace.

2.2.3. Marine Corps

Marine Corps Training and Education is a structured continuum that provides combat-ready Marines, Marine units and Marine Air Ground Task Forces (MAGTFs). Training requirements constantly adapt to internal and external forces. The Marine Corps training and evaluation (T&E) continuum has five major parts: entry-level, common skills, skill progression, and unit training and professional military education. Marine Corps training is based on defined tasks, conditions, and standards focused on core competencies, is relevant in terms of expected missions and operational environments, and implements EMW doctrine and operational concepts. Training requirement development provides combat-ready units as the Nation's expeditionary force-in-readiness and the means to attain combat readiness across the spectrum of military operations. The goal is to develop unit warfighting capabilities, so Marine units can perform as part of a MAGTF, and the MAGTF can perform as part of a Joint Task Force.

The Marine Corps Combat Development Command (MCCDC) develops Marine Corps warfighting concepts. The Command manages the Expeditionary Force Development System (EFDS) – a system that develops and integrates Marine Corps doctrine, organizational structure, training and education, equipment, and support facilities required to field combat ready forces. The EFDS assesses current and future operating environments and involves continuous adaptation of training and education infrastructure and resources to develop capabilities and associated range, training area, infrastructure and instrumentation requirements.

The operational environment dictates training requirements and planning and T&E program execution. Future conflicts likely will occur in urban complexes, requiring a marked increase in the number and

types of tactical and operational tasks Marines must be trained to execute. Furthermore, Marine Corps forces will be increasingly visible and must limit collateral damage and ensure non-combatant safety. Success in this environment requires MAGTFs fully trained in a variety of operational capabilities. The current security climate necessitates extensive range transformations to guarantee accomplishment of such temporally and spatially evolving training requirements.

2.2.4. Air Force

The Air Force training programs for aircrews uses a building-block approach. Aircrews move through three distinct phases of training that differ in terms of complexity, goals, and number of participants, all of which influence the requirements for the ranges and training areas.

Primary training involves those basic air combat proficiency skills practiced at the Primary Training Ranges (PTR). The PTRs teach basic skills, such as training on proficient delivery of practice ordnance with limited integrated air defense system (IADS) and training in emitter signal recognition and countermeasures. Meeting the repetitive elements of basic aircrew training demands that these ranges be located in close proximity to the user's installation, or else significant costs are accrued in simply traveling to and from a central facility.

Intermediate training builds on the elements learned in basic training through use of a larger and more realistic training environment to execute more complex aircrew tasks and missions. Such training usually occurs at the Combat Training Centers (CTCs) or Combat Readiness Training Centers (CRTCs). Two examples of training conducted at these facilities are the use of real or simulated targets and more sophisticated IADS, which include multiple sources and types of threats (e.g., radar and infrared guided) and more accurate replication of IADS sensors and threats. Generally, intermediate training requires a larger operating space than primary training, in terms of both horizontal area and total airspace volume. The increased complexity of the training requirements met at these facilities requires additional supporting infrastructures (e.g., more personnel and facilities to service targets, IADS threat emitters.) The significant investment required to operate and maintain intermediate training facilities has limited their number; hence aircrews in intermediate training may have to travel longer distances.

Advanced training provides the most realistic environment. In general, advanced training involves many participants operating in a horizontally and vertically integrated force against full-scale, threat representative targets situated in realistic environments (e.g., urban terrain), with a high density, coordinated IADS defending them. The objective of advanced training is to provide as close to a real combat environment as possible, while ensuring safety of the public, aircrews, other Air Force personnel (e.g., ground crews), and the training infrastructure.

2.3. Command Relationships for Ranges and Range Complexes

Under Title 10 of the United States Code, the Military Services are primarily responsible for construction, repair, and maintenance of installations, including range complexes, subject to the authority, direction, and control of the Secretary of Defense.¹⁰

¹⁰ Title 10 assigns to the Combatant Commanders responsibility for the joint training of forces under their command, but the Military Services maintain responsibility for the range complexes where these forces train. See 10 U.S.C. 164.

Department of Defense Directive 3200.15, entitled “Sustainment of Ranges and Operating Areas (OPAREAs),” dated January 10, 2003, establishes policy and assigns responsibilities under Title 10 for the sustainment of test and training ranges and operating areas in the Department of Defense (see Appendix C). The Directive assigns substantial responsibilities for range sustainment to the Under Secretary of Defense for Personnel and Readiness; the Under Secretary of Defense for Acquisition, Technology, and Logistics; Director of Operational Test and Evaluation; the Military Services; and Defense Agencies. The Directive also assigns responsibilities to the Chairman of the Joint Chiefs of Staff, the Under Secretary of Defense for Policy, the Assistant Secretary of Defense for Public Affairs and the Assistant Secretary of Defense for Legislative Affairs.

The Department has taken additional steps to ensure sound management, implementation and coordination of sustainable range responsibilities. The Senior Readiness Oversight Council (SROC) reviews range sustainment policies and issues. DoD created an Integrated Product Team (IPT), which is led by the Office of the Under Secretary of Defense for Personnel and Readiness and reports to the SROC, to act as the DoD coordinating body for developing strategy to preserve the military’s ability to train. A Working IPT, co-chaired by the Office of the Deputy Under Secretary of Defense for Readiness, the Office of the Deputy Under Secretary of Defense for Installations and Environment, and the Office of the Director of Operational Test and Evaluation meets regularly and reports to the IPT. The remainder of this section describes command relationships within the Military Services.

2.3.1. Army

The Headquarters Department of the Army (HQDA) Deputy Chief of Staff (DCS) G-3 has the responsibility as the Army Trainer to establish the priorities and requirements for Army ranges and training lands, plan for their modernization and expansion, and formulate policy for their operation and management. The G-3 at HQDA directly manages and funds the Range and Training Land Program (RTLTP). The program consists of range modernization and range operations, as well as the ITAM program, which provides the capability for land management and maintenance.

The HQDA Assistant Chief of Staff for Installation Management (ACSIM), as the Army’s overall installation manager, establishes the policy guidance and procedures for installation operations, real property management, and environmental stewardship for all activities and functions within Army garrisons. In that regard, components of the G-3’s RTLTP and ITAM programs are synchronized with ACSIM’s installation management policies as well as with the Army’s Range Safety Program, under the direction of the HQDA, Director of Army Safety, and Munitions Management program, under the direction of the HQDA DCS, G-4.

The G-3’s priorities and requirements for Army ranges and training lands, as well as day-to-day range operations, are executed at the installation level by garrison staff. Responsibility typically resides within the Directorate of Plans, Training, and Mobilization (DPTM), who reports directly to the garrison commander. The garrison commander operates under the direction of the Army Installation Management Agency’s (IMA) regions, which in turn operate under the direction of IMA. Because the Army’s training missions are the responsibility of the Major Commands (MACOMs), these organizations also play a role in establishing requirements and priorities for the Sustainable Range Program (SRP).

Mission commanders retain the mission to ensure Army units are trained and ready to fight and win our Nation's wars. As such, senior mission commanders on each installation establish and approve the requirements for ranges and training land that are forwarded through the MACOM to HQDA Office of the Deputy Chief of Staff (ODCS) G-3.

Because ranges are simultaneously integral to installations as both facilities and mission training assets, range control and management require a truly integrated approach. Mission and Garrison Commanders work in coordination with the proponent for Ranges and Training Land, ODCS G-3, and the ACSIM to analyze the adequacy of ranges and training lands to support the mission commander's METL training requirements.

2.3.2. Navy

For administrative purposes, Navy ranges are grouped in geographic complexes. While the specific ranges within those complexes may have different operational chains of command, they have common administrative requirements, such as environmental support, that are unique to each region. Validation of requirements for all training ranges in the United States and its territories falls under the purview of Commander, Fleet Forces Command (CFFC). Various Fleet and Type Commanders control ranges as tenants on the installations where they reside. The Navy has also established a headquarters-level single Range Office with oversight over all Navy ranges, replacing a previously fragmented organizational approach to these responsibilities.

2.3.3. Marine Corps

To coordinate training and education programs, the Training and Education Command (TECOM) was established within the MCCDC in July 2000. Range and installation oversight is accomplished via coordination between the Range and Training Area Management Division (RTAM) of TECOM, and the Deputy Commandant of Installations and Logistics (Logistics and Facilities) (DC I&L (LF)) at Marine Corps Headquarters. RTAM is the executive agent charged with developing systems, operational doctrine and training requirements for Marine Corps forces. DC I&L (LF) has broad responsibilities for all aspects of installation and facilities planning, management and investment. Synchronizing these efforts ensures mission-capable operational ranges are available throughout the Marine Corps.

2.3.4. Air Force

HQ USAF, Deputy Chief of Staff, Air and Space Operations, through the Director of Operations and Training, has designated the Ranges and Airspace Division (HQ USAF/XOO-RA) as the focal point for USAF ranges. The Ranges and Airspace Division develops policy, advocates resources, and manages the oversight of Air Force ranges.

2.4. Current Range Requirements Derived from Training Requirements

This section summarizes current range, operating area, and airspace requirements derived from training requirements.

2.4.1. Army

The Army uses the RTLP process to plan, estimate, and program for the live training facilities (ranges and maneuver/training area) needed to meet its live training requirements. There are two tools used to accomplish this. The first is the Army RTLP Requirements Model (ARRM). ARRM is an automated database that calculates and compares live training assets and requirements. ARRM compares these two data sets and identifies training capacity shortages and excesses of an installation by individual training facility. The second tool is the Installation Training Capacity (ITC) Methodology. It is a standard methodology used to analyze the live training capability of Army installations. It shares the same

database as ARRM, but also includes an evaluation and scoring capability, and a “what if” capability that allows for changes to requirements and assets. Additionally, the ITC contains a two-part qualitative assessment of specific mission essential live training facilities and demographic and environmental factors that affect live training.

The ARRM calculates training requirements for major Army units and schools, including specific training events required, the number of times each needs to be performed, required maneuver acreage, and the duration of each event. It develops total installation land requirements for institutional training (i.e., schools) and operational training (i.e., units). The ARRM calculates maneuver area requirements and range requirements. The ARRM allows the Army to develop detailed training requirements from standard databases and established doctrinal standards.

2.4.2. Navy

To meet IDRC requirements, the Navy has a geographically dispersed set of training complexes on each U.S. coast that provide the areas required to conduct controlled and realistic training scenarios. Today’s high-performance aircraft and ships employ weapons of greater capability and complexity, with unique delivery tactics requiring a robust training range/OPAREA infrastructure.

2.4.3. Marine Corps

The Marine Corps requires access to ranges, training areas and airspace that is sufficient to support training to standards across the training continuum. The ultimate objective of Marine Corps training is to provide mission-capable MAGTFs. MAGTF training requirements determine range and training area requirements. The Marine Expeditionary Unit (Special Operations Capable), or MEU(SOC), is the standard, forward deployed MAGTF. Current training requirements for the MEU(SOC) include the following Core Capabilities: Amphibious Operations, MEU-level Maneuver Ashore, Combined-arms Operations, Maritime Special Operations, Military Operations Other Than War (MOOTW), and Supporting Operations. Within these core capabilities, the MEU(SOC) trains to accomplish a spectrum of METs and crisis response operations including over 20 mission areas. Additionally, the Marine Expeditionary Brigade (MEB) is the Marine Corps primary contingency response force and is the smallest MAGTF capable of forcible entry operations. As such, the MEB must be trained in mission essential tasks required of the primary operational-level warfighting force in the theater of operations.

As the Marine Corps’ principal warfighting organization, the Marine Expeditionary Force (MEF) must train to conduct and sustain expeditionary operations in any geographic environment. Current training requirements for the MEF, as established in the Marine Corps Task List (MCTL), are (1) conduct MEF maneuver, (2) conduct intelligence operations, (3) employ and coordinate fires, (4) perform logistics and combat service support, (5) exercise command and control, and (6) train in force protection.

2.4.4. Air Force

The Air Force groups its range complexes into three categories: Primary Training Ranges; Combat Training Centers and Combat Readiness Training Centers; and the Major Range and Test Facility Base. These categories reflect the different types of ranges that are required to meet Air Force training requirements. The land space, air space, targets and target arrays, and systems for simulated integrated air defense, scoring, and feedback grow increasing large or complex in the progression through the range categories.

For example, the land space at Primary Training Ranges is generally sized to support basic training events, but often limits the delivery of weapons. For Combat Training Centers and Combat Readiness Training Centers, the land area is generally determined by sensor ranges, with terrain representative of threat areas. For the Major Range and Test Facility Base, the land space is large enough for tactical maneuvers in coordinated, multi-platform, multi-warfare area operations.

Appendix D provides a summary comparison of the types of Air Force ranges, the types of training each can support, and information of different characteristics each range type has to support training.

2.5. Future Range Complex Requirements

Many factors will influence future range complex requirements, and the following sections discuss near-term and long-term future projections for Military Service training range requirements. Two of the most important factors will be the development and implementation of the Joint National Training Capability and the need to establish range requirements that reflect the Department's sustainable ranges initiative.

2.5.1. Army

The Army is planning, programming, and implementing necessary range modernization to accommodate the transformation of six current force units to STRYKER Brigade Combat Teams (SBCTs). The SBCT is an infantry-centric unit with 3,600 soldiers that combines many of the best characteristics of the current Army forces and exploits technology to fill a current operations capability gap between the Army's heavy and light forces. The Army is identifying and addressing potential shortfalls in live-fire training facilities for the SBCTs using the Range and Training Land Program (RTLTP) requirements process.

The vision of Army training in 2010 is a networked organization engineered to meet institutional, unit, and modernization training needs for the Army. Training will remain focused on wartime missions. Realistic, sustained, multi-echelon, and totally integrated training will be stressed at all levels. Virtual and constructive simulations and simulators will support the achievement and sustainment of training readiness in units. The vision is to build synthetic training environments, integrate them with live training, and use automated training management tools to provide trainers with a menu of structured exercises, to include mission-rehearsal capabilities, driven by a flexible, METL.

By 2015, the Army will have transformed to the Future Force. The FF is characterized by an integrated Joint, Interagency, and Multinational (JIM) Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architecture, a revolutionary architecture with linkages to the current, STRYKER, and JIM forces. FF systems support decisive dominant maneuver – horizontal and vertical, day and night – in all weather and terrain as dismounted or mounted combined arms teams and provide the best combination of low-observable, ballistic protection, long-range acquisition and targeting, and first round hit-and-kill technologies.

Based on the Operational and Organization (O&O) Plan for the FF Maneuver Unit of Action, the System Training Plan for the Future Combat System, and the System Training Plan for the Future Infantry Combat Weapon (FICW), the Army estimated the live training requirements for the Future Combat System (FCS) Equipped Unit of Action (UA) and facilities necessary to support those requirements.

Army installations that may become home stations for FF UAs will be evaluated against live training facility requirements. By estimating these requirements early in the transformation process, the Army can make efficient use of existing installation resources when making Future Force stationing decisions and

plan and program for future facility modernization requirements. The Army has made no stationing or sequencing decisions for transforming current units to the FF.

2.5.2. Navy

Navy training ranges will continue to play a critical role in supporting IDRC training for operational forces. Strategic planning for Navy range complexes will include future training operations derived from new Naval platforms and weapons, as well as improvements to infrastructure to support the JNTC. These issues will be addressed in the forthcoming Navy Fleet Training Range Strategy and individual Range Complex Management Plans (RCMPs) under development for each Navy range complex under the Tactical Training Theater Assessment and Planning (TAP) program. In conjunction with the development of RCMPs, a Range Capabilities Document (RCD) will be created to assess the infrastructure and technological needs of ranges to support specific warfare areas. The Navy will use these plans to implement the Office of the Secretary of Defense Sustainable Range Guidance, and evaluate new requirements throughout the planning, programming, budgeting, and execution process.

2.5.3. Marine Corps

Future tactics, techniques, procedures, and training requirements are evolving to leverage new capabilities. The Marine Corps T&E continuum will evolve to meet these diverse and changing operational needs. Capabilities for Expeditionary Maneuver Warfare (EMW, the Marine Corps' capstone concept for the early 21st Century) will enhance MAGTF mission capabilities. Future MAGTF training requirements will be driven by expected operational contexts and EMW operational concepts, and likely will be characterized by: (1) extended-range training operations to exercise EMW capabilities, (2) MEB live-fire and maneuver exercises, (3) increased Military Operations in Urban Terrain (MOUT) training requirements, (4) enhancement of T&E through instrumented ranges and target systems, (5) increased reliance on MAGTF sustainment training during deployment, and (6) increased joint training.

The *Strategic Plan, Management Initiative Decision (MID) 906*, approved by the Deputy Secretary of Defense (January 2003), specifies seven major JNTC training centers for FY 03-05: the Marine Air Ground Task Force Training Command (MAGTFTC), 29 Palms; U.S. Army National Training Center; Joint Readiness and Training Center; Fort Bliss Exercise Roving Sands training range; U.S. Navy Fleet East training area; U.S. Navy Fleet West training area; and U.S. Air Force Nellis test and training ranges. Additional instrumentation is needed to integrate MAGTFTC into the JNTC; *MID 906* provides substantial funding for design and development of advanced training technologies and emphasizes that allocations are not for "[b]asic service modernization efforts."

The Marine Corps is committed to full JNTC participation, and required range capability planning is underway. TECOM leads Marine Corps JNTC initiatives, supported by the Marine Corps Systems Command (MARCORSYSCOM) and the Bases and Stations. TECOM (G-3) leads the Marine Corps' JNTC exercise design and requirement identification process for participating range certification and chairs the Range Instrumentation System Working Group (RISWG), which develops policies, priorities and requirements for Range Instrumentation Systems implementation. TECOM–Technology Division (Tech Div) is the lead for range instrumentation technology and plays key roles in range modernization programs and JNTC. Tech Div develops range instrumentation requirements documents and coordinates with MARCORSYSCOM to support RISWG requirements and with other Services to support Range Instrumentation System design and acquisition. Tech Div is actively developing requirements jointly with the Army. In conjunction with the Tactical Training Exercise Control Group at 29 Palms, RTAM develops requirements and priorities for range instrumentation, modernization and investment. RTAM also defines range instrumentation requirements of other Marine Corps bases and stations for inclusion in the budget process and coordinates with TECOM Tech Div to identify solutions to requirements

developed by the RISWG. Aiding this process in the future will be the RTAM-initiated RCD range requirements assessment. This document, to be completed in the first quarter of FY04, describes current and anticipated range training requirements and will be critical to range transformation efforts. Marine Corps Bases and Stations, with TECOM G-3, TECOM Tech Div, and RTAM, identify training range modernization requirements and assist in budget development.

The Marine Corps' premier combined-arms training center, 29 Palms, is one of the initial JNTC venues identified in MID 906 and will be linked with other Service's major Western Range Complex JNTC training centers. To meet JNTC objectives, significant planning and substantial investment supporting enhanced MAGTF training in the Combined Arms Exercise (CAX) Program will be required. To develop, program, and establish a Range Instrumentation System at MAGTFTC to enhance combat realism, present a realistic Opposing Force (OPFOR) profile, and provide ground truth and feedback is a priority. These initiatives support the CAX Program and will meet the criteria for JNTC accreditation. Pursuant to Training Transformation guidance, the MAGTFTC Range Instrumentation System is to be included in future budgets, so that fully instrumented CAX training at 29 Palms is possible by FY 2008.

2.5.4. Air Force

Whenever there is a change in air power doctrine or introduction of a new weapons system, the design, location, and infrastructure supporting training ranges and related airspace must be updated and new training must be developed. In general, this relationship occurs in two steps: first, there is the change in doctrine or systems; second, there are changes in the supporting training infrastructure.

As changes in equipment and doctrine are made they are translated into specific tasks that aircrews must master. This process occurs during development of the Mission Area Plans (MAPs) for each of the core competencies of the Air Force: Air and Space Superiority; Information Superiority; Global Attack; Precision Engagement; Rapid Global Mobility; and Agile Combat Support. The MAPs identify key training events to allow for comparison against existing infrastructure and force-basing plan. From such an analysis, it would be possible to quickly and efficiently identify any limitations in the existing infrastructure that would constrain the ability of a unit to meet its new training objectives. Using new processes the Air Force has been able to translate key emerging operational capabilities and tasks identified in the MAPs into training capabilities and tasks required for ranges and airspace.

The F/A-22 and Joint Strike Fighter (JSF) are the next generation in fighter aircraft, and have unique capabilities that result in new infrastructure needs in areas as diverse as environmental compliance and IADS simulation. Similarly, the Unmanned Aerospace Vehicle (UAV) and Unmanned Combat Aerospace Vehicle (UCAV) will undoubtedly drive changes in military flight training. Infrastructure changes required to support these systems are still being documented; however, modernization initiatives are in place to improve supporting infrastructure.

In addition to requirements driven by the introduction of new aircraft, introduction of new or improved weapons can also result in changes in the supporting testing and training infrastructure. Among the recently developed weapons are the Joint Direct Attack Munition (JDAM) and the Joint Stand-off Weapon (JSOW). New weapons are becoming ever more precise, have an increased standoff distance, and have very large Weapons Safety Footprints that cannot normally be contained on PTRs. Such changes result in significantly different requirements related to the design and configuration of ranges where aircrews will practice with these weapons deliveries. Introduction of more advanced weapons, such as directed energy weapons and airborne lasers will change the physical layout of ranges and affect other aspects of testing and training range operations such as target array design, attack profile configurations, and the ability to operate over additional lands owned by other stakeholders.

Finally, the increasing importance of integrated air, space, and information operations (ASIO) will drive changes in testing and training requirements. As these technologies advance, the need for a full integration of ASIO with current air operations training increases. As this integrated testing and training matures, the complexity and fidelity of the range and airspace requirements will expand.

3. SERVICE RANGE INVENTORY

Appendix E provides maps and an inventory of DoD range complexes, individual ranges not in complexes, and special use airspace. The inventory presented in Appendix E draws from the databases and inventories that the Military Services use for the management of range complexes, installations, airspace, and operating areas. The Military Services have made substantial progress in developing the inventories.¹¹

3.1. DoD Operational Range Inventory

As discussed earlier, under Title 10 the Military Services are principally responsible for the management of range complexes. As a result, our existing training range inventories and databases have generally been created and managed by the Services to meet Service unique requirements. As the Department carries out its Training Transformation Implementation Plan, we expect this situation to evolve.

The increased emphasis placed on joint military operations by the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, the Combatant Commanders, and the Military Services must be reflected in increased joint training at our range complexes, and our associated management tools must grow accordingly. We plan to build on the Military Services' existing range inventories and management information systems to fully support the joint training and warfighting reflected in our Training Transformation efforts, while continuing to meet Service-specific requirements. DoD continues to work toward an enterprise level range and training information system.

3.1.1. Army

The U.S. Army Environmental Center (USAEC) is the program manager for the Army Range Inventory and develops and maintains the Army Range Inventory Database (ARID). The Training Directorate (DAMO-TR) of the Office of the Deputy Chief of Staff for Operations (ODCSOPS), as the Headquarters, Department of the Army (HQDA) proponent for ranges and training land, is responsible for assisting in overseeing the Army range inventory. The Army developed and maintains the ARID through a comprehensive process involving the ODCSOPS, the Assistant Chief of Staff for Installation Management (ACSIM), Regional Support Centers (RSCs) for the ITAM program, major commands, and almost 500 installations.

The Army range inventory was conducted between June 2000 and December 2003. It documented 10,530 active and inactive ranges occupying over 15 million acres of land at 479 installations and training sites located in all U.S. States, Puerto Rico, American Samoa, Korea, Germany, Italy, and Belgium. Army range complexes and individual ranges are listed in Appendix E.

3.1.2. Navy

Navy range complexes and individual ranges not in a complex are summarized below and listed in Appendix E. Most Navy ranges are grouped into geographical complexes. Those ranges not in a complex are the Brownwood military operating areas (MOAs) in Central Texas and the Major Range and Test Facility Base (MRTFB) ranges.

¹¹ The GAO recommended the further development of these inventories. See **Military Training: DOD Lacks a Comprehensive Plan to Manage Encroachment on Training Ranges**. GAO 02-614, June 11, 2002, p. 31.

The Navy MRTFB consists of T&E facilities, including ranges. The MRTFB ranges supplement Navy-training needs in multiple areas in concert with their primary mission of acquisition support. The MRTFB Ranges serve a primary mission of acquisition support. They supplement Navy-training needs in multiple areas. The Navy MRTFB ranges include the NAVAIR Atlantic Test Range, the NAVAIR Point Mugu Sea Range, the NAVAIR China Lake Ranges, and the Atlantic Underwater Test and Evaluation Center.

The Navy defines training range capabilities in terms of the ability to support training to the Naval Warfare Mission Areas (Anti-Air Warfare, Amphibious Warfare, Anti-Surface Ship Warfare, Anti-Submarine Warfare, Command and Control Warfare, Logistics, Mine Warfare, Naval Special Warfare, and Strike Warfare) and range capacity as the ability to support the three levels of the IDRC (basic, intermediate, and advanced).

The Navy's training range complexes include the Hawaiian Islands, Whidbey Island, San Francisco, Fallon Southern California complex, El Centro, Boston Area, Virginia Capes (VACAPES), Atlantic City, Narragansett, Cherry Point, Jackson and Charleston, Key West, Gulf of Mexico (GOMEX), and Meridian complexes in the United States, and the Okinawa, Japan, Marianas, and Diego Garcia sites abroad. Short descriptions of each of these range complexes are provided at Appendix F.

3.1.3. Marine Corps

Marine Corps infrastructure includes 15 major bases and stations, several smaller installations, and 185 reserve facilities in the United States and Japan. These installations include bases, recruit depots, air stations, logistics command installations, and Marine Forces Reserve / MCRSC facilities. Marine Corps range inventory comprises an array of range complexes and associated airspace. The Ground/Air-to-Ground Range Complexes are: MCB Quantico, MCB Camp Lejeune, MCB Camp Pendleton, MAGTF 29 Palms, MCB Hawaii, and MCB Camp Butler, Japan. The Air Combat/Air-to-Ground Ranges include MCAS Cherry Point, MCAS Yuma/Bob Stump Training Range Complex (former Yuma Training Range Complex, (YTRC)), MCAS Beaufort/Townsend Range, MCRD Parris Island, MCAS Miramar, MCLB Albany, and MCLB Barstow.

Marine Corps' major bases and stations are strategically located near air and seaports, major truck routes and railheads for fast and efficient movement of Marines and material. Due to links to operating forces and associated readiness, the base and station condition—the MAGTF's "fifth element"—is of vital importance. Because integrated force training capability is an essential requirement, infrastructure development and range management planning seek to afford efficient yet capable facilities, training areas, and ranges. In light of encroachment and fiscal pressures, the Marine Corps faces significant challenges to provide and maintain a well-organized and able infrastructure. Appendix E summarizes the Marine Corps's range complexes.

3.1.4. Air Force

This first report for Sections 366 and 320 lists all Air Force testing and training ranges within the United States. These ranges are located in 24 States and are distributed across the country. The Air Force ranges listed in Appendix E have a combined total acreage of 7,703,117 acres. Of this, 5,891,078 acres are either owned or directly controlled by the Air Force, and include public lands that are withdrawn from public use. To give a broader perspective, another 1,812,039 acres are owned or controlled by other entities, including the Departments of the Army and Navy.

Users from various units, installations, and Services share airspace controlled by the Air Force. For this reason, a simple one-to-one linking of airspace to installation does not show the full picture of airspace usage.

As a general rule, Appendix E links units of SUA to the installation responsible for scheduling their use. A full discussion of the management of SUA is beyond the scope of this report. Readers should therefore interpret the airspace information in Appendix E with appropriate caution. The Air Force will include a fuller discussion of airspace needs relating to ranges in subsequent Section 366 and 320 reports.

3.2. Range Capacities and Capabilities

The Department is currently collecting data and conducting analyses for the 2005 round of military base realignments and closures (BRAC 2005).¹² As an integral part of the BRAC 2005 effort, the Department is conducting detailed analyses of DoD installations, including training ranges. The results of all BRAC 2005 analyses cannot be released until May 2005, when the Department presents its BRAC 2005 recommendations to the independent Defense Base Closure and Realignment Commission.

This report addresses range capacity using a variety of data sources and methods currently available or in use within the Department. As DoD proceeds in the BRAC 2005 process through May 2005, it may develop new data sources and methods to measure, analyze, and report range capacity. Accordingly, BRAC 2005 analyses of range capacity may reflect information, metrics, analytical methods, and conclusions that could vary from those presented in this report.

DoD's range complexes, SUA, and ocean operating areas provide a wide variety of capabilities to support military training requirements. The capabilities offered by our range complexes allow all of our military forces to train for all of their assigned operational missions. For example, ground forces can train in operational maneuver; air forces can train for air-to-air, air-to-ground, and other missions; and naval forces can train for strike and anti-surface, anti-submarine, anti-air, and amphibious warfare. Special forces can train to practice their missions. All forces can receive essential live fire training in safe conditions and train for command, control, communications, and intelligence tasks. Forces can train jointly to prepare for joint operations.

Some capabilities are inherent in the physical characteristics of the range complexes themselves. For example, a certain tract of land provides capabilities merely by virtue of its size, terrain, and climate. An ocean operating area presents capabilities by virtue of its depth, proximity to land, and normal sea conditions. A unit of SUA offers capabilities by virtue of its length, width, height, and its general climate.

Other capabilities arise from investments that our nation has made in these facilities. For example, the Military Services have purchased complex systems to score training activities – from training ground forces in firing the M-16 rifle to training pilots in air-to-air combat and bomb delivery – and provide critical feedback. Targets simulate enemy systems and facilities. Emitters simulate the electronic warfare environment. At the DoD's largest training centers, highly capable opposition forces challenge military units undergoing training in complex exercises.

¹² BRAC 2005 is authorized by the Defense Base Closure and Realignment Act of 1990, Public Law 101-510, as amended through the National Defense Authorization Act for Fiscal Year 2004. For more information about BRAC 2005, see the Department's BRAC web site: www.defenselink.mil/brac

3.2.1. Army

The capabilities and capacities of the ranges in the Army inventory are best communicated by the facility descriptions of each of the range types (by facility category code, FCC). Appendix G contains descriptions of each type of range and training land in the current Army range inventory and descriptions of the 15 newly proposed ranges the Army anticipates the Future Force will require at their eventual home station installations. Where appropriate, the description includes the number of firing points or lanes that are in the standard Army design for each range type. This provides some insight into how many soldiers or crews can train on the facility at one time. It should be noted, however, that due to topography and space constraints most ranges in the Army inventory are not constructed with the standard numbers of firing points or lanes. This is particularly true for ranges located at remote reserve component (Army National Guard and Army Reserves) sites rather than at major training installations.

3.2.2. Navy

The capacity and capability of Navy training range complexes and individual ranges not in a complex are described above in the Section entitled “Operational Range Inventory” and listed in the inventory provided at Appendix E. The Navy defines range capabilities as the ability to support training in the Naval Warfare Mission Areas: Anti-Air Warfare, Amphibious Warfare, Antisurface Ship Warfare, Antisubmarine Warfare, Command and Control Warfare, Logistics, Mine Warfare, Naval Special Warfare, and Strike Warfare.

3.2.3. Marine Corps

The Marine Corps relies on an extensive portfolio of land and airspace resources to accomplish training at all levels of the continuum—entry and individual, unit, MAGTF, and Joint training. The major “Marine Corps owned and operated” training ranges comprise a suite of range complexes at the portfolio’s core. The Marine Corps also depends on extensive cross-Service utilization and access to non-Marine Corps training lands and airspace. Additionally, the Marine Corps relies on foreign ranges, non-DoD federal lands (e.g. Bureau of Land Management [BLM] property), and non-federal lands.

Assessing range capabilities requires consideration of a range’s role in supporting the training continuum and Training and Readiness (T&R) Program and variables affecting range capability. Such variables include training “battlespace” size, terrain, weather, safety, available targets and instrumentation, and encroachment impacts. These variables affect a range’s training value and role in the training continuum. Enhancements to the Range Management System will incorporate training standards from the T&R Program, encroachment information, and other range constraints data, providing a mechanism to assess Marine Corps ranges in terms of relative training values. Appendix H identifies representative range capabilities of Marine Corps installations and associated ranges.

Appendix H depicts representative range capabilities in terms of the level and type of T&R events that can be supported. These tables do not reflect range capabilities in terms of training value.¹³ Planned enhancements to the Range Management System will incorporate training standards from the T&R Program, encroachment information, and other range constraints data, providing a mechanism to assess Marine Corps ranges in terms of training value and readiness.

¹³ For example, MCB Hawaii and Camp Pendleton are both depicted as supporting amphibious operations, but Camp Pendleton's capability in this area is greater, due to its more extensive beaches and inland maneuver corridors. Each of these installations, and the Marine Corps, is aggressively pursuing initiatives to enhance training capabilities in these and other areas.

In addition to the major "Marine Corps owned and operated" training ranges, the Marine Corps also depends on extensive and extended access to non-Marine Corps training lands and airspace, and in particular, it engages in extensive cross-Service utilization. In addition to access to other Services' ranges and airspace, the Marine Corps relies on other nations' ranges, non-DoD federal lands such as BLM property, and non-federal lands – both public and private.

For example: A typical MEU (SOC) from I MEF will train in amphibious tactics at Camp Pendleton and in naval gunfire techniques at the Navy's San Clemente Island Range Complex, conduct air combat and CAS exercises at the MCAS Yuma / YTRC ranges, conduct a combined-arms exercise at MCAGCC 29 Palms, train in mountain warfare at the Marine Corps Mountain Warfare Training Center, Bridgeport, and engage in an urban training exercise using non-federal resources in a major metropolitan area. The 22nd MEU recently completed a month-long training event at the Army's Fort A.P. Hill. The 13th MEU recently conducted MOUT training at host-nation facilities in Singapore. The 1st Marine Division's Desert Scimitar exercise utilizes BLM land and has included a tactical bridging exercise across the Colorado River. Development of an expeditionary force training capability at Eglin Air Force Base is a priority, and the Marine Corps proposes to execute two ten-day training exercises with a MEU(SOC) at Eglin each year.

The following is a partial list of non-Marine Corps training resources that are used for Marine Corps training:

Fuji Maneuver Area (FMA), Camp Fuji, Japan

The FMA supports training for III MEF forces in each maneuver and live-fire MAGTF element.

Eglin AFB, FL (USAF)

Eglin AFB provides live-fire training (alternative training capability to that lost at Vieques) for eastern U.S. Naval Expeditionary Forces/Expeditionary Strike Groups (ESG) and their embarked MEU(SOC)s.

San Clemente Island (SCI) Range Complex, CA (USN)

Marine Corps operations and training at SCI exercise all MAGTF elements. SCI is the only West Coast range that supports naval surface live-fire training.

Fort Bragg, NC (USA)

Operations and training at Fort Bragg exercise MAGTF artillery and engineer elements at all levels, including the annual artillery exercise, Rolling Thunder.

Fort A.P. Hill, VA (USA)

Utilized year-round, operations and training at Fort A.P. Hill exercise combat elements of a MEU(SOC) and live-fire and maneuver training.

Fort Pickett, VA (USA)

The operations and training conducted at Fort Pickett focus on qualification and firing of the 2d Marine Division / II MEF armored vehicle and tank assets (i.e. 120mm tank main gun and the 25mm chain gun training).

Pohakuloa Training Area (PTA), Marine Corps Base Hawaii (MCBH), (USA)

Marines of the III MEF stationed at MCBH use the PTA for MAGTF live-fire combined arms training. The PTA accommodates small arms, artillery, anti-armor, explosives/demolitions, and inert aviation ordnance.

Non-military and Foreign Training Areas

The 1st Marine Division conducts annual command and communication capabilities training (Desert Scimitar) on federally-owned or managed (BLM) land near 29 Palms, CA and Yuma, AZ. The Marine Corps also trains on host-nation lands (e.g. Scotland, Norway, Korea, Denmark, Australia, and the Horn of Africa and West Africa).

3.2.4. Air Force

Capacities are defined as the suitability of range complexes for accomplishing testing and training missions. Capacity can also explain the amount of activity that can be accommodated. The testing and training capacity of each range is dictated by a number of factors. The most important variable in evaluating capacity is whether or not a range has the capability to support a given task. It should be readily apparent that if a range cannot support a specific task (e.g., no live munitions use is allowed), its capacity in that area is zero. If a range can support a specific activity, one important variable is the operating period of the range (i.e., number of hours per day and number of days per year). Other important variables are the number of aircraft that can be supported during a given sortie and the communications capacity of the range. The advent of modern data systems that track and record events for subsequent analysis has placed greater demands on the communications infrastructure. Information on the capacities of each of the ranges in the United States is presented in Appendix I.

Capabilities are defined as major attributes of range complexes. Information on the capabilities of these ranges is presented in Appendix I. For each range, Appendix I lists the types of aircraft that normally use the range to meet training requirements and specific training activities that can be supported on each range (e.g., training with live ordnance, inert ordnance, whether it has threat emitters).

3.3. Encroachment

“While the effect varies by service and individual installation, in general encroachment has limited the extent to which training ranges are available or the types of training that can be conducted.”¹⁴

This is a conclusion that the General Accounting Office reached in its June 2002 report on encroachment and military training ranges. Today, encroachment constrains the Department’s ability to take full advantage of our investment in training capabilities.

The SROC, which DoD created in 1993, is the senior-level DoD forum for readiness policy and oversight, including encroachment and related issues. The SROC is comprised of high-level military and civilian officials and is chaired by the Deputy Secretary of Defense. The SROC convenes monthly to review the readiness of military forces. The SROC provides quarterly readiness reports to the Congress.

¹⁴ *Military Training: DOD Lacks a Comprehensive Plan to Manage Encroachment on Training Ranges.* GAO 02-614, June 11, 2002, p. 9.

In November 2000, the SROC identified 17 encroachment issues affecting military training and testing. These encroachment issues impact training and testing by restricting range activities and capacities. Such restrictions affect combat readiness. Eight of the seventeen encroachment issues were identified as especially critical for action and presently have action plans in place. This section discusses these eight issues, plus three more major sources of encroachment and their impacts.

3.3.1. Endangered Species and Critical Habitat

Military lands provide habitat for more than 300 federally listed threatened and endangered species that must be protected under the Endangered Species Act (ESA). Many military installations and ranges are surrounded by urban development, and often become the only large undeveloped areas available to support endangered species. At the same time, new weapons systems are being introduced with increased standoff, survivability and lethality capabilities. Warfighting strategies are changing for more widely disbursed, highly mobile units with very long-range firepower. Base realignment and closure has resulted in the concentration of units at remaining bases. Forces stationed overseas have been redeployed to U.S. installations. Thus, environmental concerns arise as a result of greater use of military ranges and operating areas in the Continental U.S. As land use restrictions increase in order to protect endangered species, there is the potential for reduced flexibility to use military lands for training and testing.

Changes in the ESA that the Congress enacted in Section 318 of the National Defense Authorization Act for Fiscal Year 2004 will improve the Department's ability to balance the conservation of protected species and military readiness. The provisions in Section 318 will allow the Department to manage protected species through the implementation of integrated natural resource management plans required by Section 101 of the Sikes Act, rather than through the designation of critical habitat.

3.3.2. UXO and Munitions

Ranges and training areas are critical to DoD's ability to conduct realistic, live-fire training and weapon systems testing. Live-fire is, and will remain, the cornerstone of Service training and testing. Military live-fire training and testing activities by necessity deposit unexploded ordnance (UXO) and munitions constituents onto military lands. CERCLA, RCRA, the Clean Water Act (CWA), and the Safe Drinking Water Act have implications for the use of military munitions, to include UXO and munitions constituents on operational ranges. There is a growing recognition that the application of these environmental laws in ways unanticipated or unintended when first enacted can reduce range access, availability, capacity, and capability. Restrictions on training and testing can increase the extent to which military readiness is compromised. Furthermore, uncertain application and inconsistent enforcement of legislation and regulation limit DoD's ability to plan, program, and budget for UXO and munitions compliance.

3.3.3. Frequency Encroachment

With very few exceptions, training and testing rely heavily on the radio frequency (RF) spectrum. The RF spectrum is essential for the operation of national defense systems such as Global Positioning System (GPS), precision guided munitions, tactical radio relay communication systems, and air combat training systems. These systems and emerging technologies are becoming increasingly more complex and data-intensive, resulting in an increased demand for RF bandwidth. Commercial spectrum uses are increasingly coming into conflict with military RF requirements. Since 1992, DoD has lost approximately 27 percent of the total RF spectrum allocated for aircraft telemetry as a result of congressionally mandated spectrum reallocations and other regulatory mechanisms to accommodate commercial devices. The reallocation of this spectrum and increased commercial RF interference, along

with military systems demands for bandwidth, put important training and testing activities at an increased risk.

3.3.4. Maritime Sustainability

Training and testing at sea is complicated by the demands of regulatory compliance, which can adversely affect the ability of U.S. Naval forces to sustain operations, training exercises, and testing in the maritime environment. For example, the Marine Mammal Protection Act (MMPA), seeks to “protect from harm” sensitive habitats and living marine resources such as marine mammals, sea turtles, and coral reefs. But overly restrictive interpretation of this goal can, and has, inhibited naval readiness activities globally. For example, regulatory compliance efforts require DoD to consult with United States Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS) or National Oceanic and Atmospheric Administration (NOAA) Fisheries, and state regulators when a proposed action may “affect” a protected resource. The consultation process in turn can result in stringent restrictions on DoD activities. Such measures restrict training and testing activities essential to Naval readiness and marginalize the Navy’s ability to sustain future training and testing affiliated with emerging technologies.

Section 319 of the National Defense Authorization Act for Fiscal Year 2004, amended the MMPA by clarifying definitions, authorizing a national security exemption that can be invoked by the Secretary of Defense, and requiring the consideration of the impact of MMPA mitigation on military readiness activities. These changes will help the Department address maritime encroachment issues.

3.3.5. Air- and Land-space Restrictions

DoD requires SUA to conduct realistic airpower training, weapons employment, and critical test and evaluation of future aircraft, weapons, and systems. SUA is vital to military training and testing but is in conflict with the growing demands of the deregulated commercial airlines and general aviation that compete with military aviation activities for the same airspace. Moreover, new and emerging weapons platforms and systems will require more rather than less airspace for realistic training and testing. SUA will become more critical with emphasis on near real-time management. Such management will require a more integrated Federal Aviation Administration (FAA)/DoD process to increase the efficacy of SUA practices and to sustain military SUA for the future.

With substantial land-based forces, the U.S. military needs land to train. Lack of required access to sufficiently large contiguous pieces of land to conduct doctrinally sound maneuver training is the single most critical external constraint facing land-based training. Modernization has increased our combat units’ speed, range, and mobility and has dramatically improved the command and control capabilities of commanders. They no longer require line-of sight, but increasingly rely on technology to employ their units. Constraints on the availability of training land are largely a factor of existing installations footprints, urban growth, and natural resource conservation requirements.

3.3.6. Air Quality

Readiness limitations can arise due to application of the Clean Air Act (CAA) to emissions generated on military installation and ranges. The two most common concerns are opacity rules and air conformity requirements. Opacity rules can restrict or prohibit some training and testing activities such as smoke and mounted maneuver training and can limit prescribed fires to manage vegetation. Opacity is a sensitive issue with the public, especially near parks and designated wilderness areas. Further, the “general conformity” requirements of the Clean Air Act, applicable only to federal agencies, threatens the Department’s ability to deploy new weapons systems and relocate existing ones, despite the fact that only

minor levels of emissions are involved. Therefore, opacity and conformity standards may restrict certain training and testing operations, as well as restationing or deploying new weapons systems in non-attainment areas.

3.3.7. Airborne Noise

Noise associated with military readiness (e.g., aircraft operations, small and large caliber weapons firing, rocket launches, engineer detonations, and sonic booms) is an issue at installations, under low-level flying routes, and at training and testing ranges. The pivotal issue of noise is the impact or perceived impact of noise on people, animals (both wild and domestic), structures, and land use. The degrees to which there are noise restrictions are directly related to the presence of people, wildlife, and noise-sensitive land near military installations, ranges, and low-level aircraft training routes.

3.3.8. Urban Growth

Urban growth in close proximity to active military installations can lead to operational challenges for the installation and ranges, and may constitute health and safety threats to the community. Such growth is the root cause of many other encroachment concerns. Aircraft operations have adverse noise and safety implications. Ground training, such as artillery fire, also generates noise that can adversely affect the surrounding community. Residential areas and places of public assembly (e.g., schools, churches, restaurants, theaters, and shopping centers) often are not compatible with military activities when located close to military installations and ranges. At night, light emanating from nearby communities may interfere with training in the use of night vision equipment. Public pressure to reduce noise and the residual effects of military training and testing activities and to ensure safety often forces installations and ranges to restrict those operations deemed disturbing to the community. In general, such restrictions are put into place during certain portions of the days or when the activities exceed established noise thresholds or safety criteria. In areas with adequate land space, community planners can acquire buffer zones between urban areas and military rangelands that provide noise and safety barriers to military operations.

3.3.9. Cultural Resources

Cultural resources are prevalent on military installations and ranges. As such, they are subject to the provisions of Federal and state legislation and regulation, including the Native American Grave Protection and Repatriation Act (NAGPRA), the National Historic Preservation Act (NHPA), and the Archeological Resources Protection Act (ARPA). These statutes direct the conservation and preservation of Native American, European, African/American and other cultural resources sites. Military installations and ranges must accommodate these sites by protecting or mitigating interference with them according to Federal and state compliance requirements. In some cases, the cultural sites may interfere with training and testing activities by limiting access to areas where sites are found. In such cases, range management and operations must adjust to regulatory compliance by providing training workarounds and range sustainment alternatives.

3.3.10. Clean Water

Water quality is an environmentally sensitive issue for all stakeholders on and near military training and testing ranges. The CWA, the legislation that regulates discharges of pollutants into the waters of the United States, gives the Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting wastewater and water quality standards. Private litigants have alleged

the CWA applies to military lands where munitions constituents released during the course of testing and training may discharge into water sources. If these litigants prevail on this theory, the act of using munitions during the course of testing and training on operational ranges could be subject to CWA permitting requirements and, depending on the regulatory controls imposed, could significantly interfere with training and testing.

3.3.11. Wetlands

Some military ranges contain wetlands, considered a scarce and valuable natural resource. They are vital fish and wildlife habitats, some surrounded by upland with no apparent surface water outlet. Wetlands are unique ecosystems sensitive to disturbance. They are protected under the National Environmental Protection Act (NEPA), the North American Wetlands Conservation Act, CWA, and other laws. EPA manages wetlands in the Office of Wetlands, Oceans, and Watersheds. Military operations normally avoid using wetlands during tactical operations because they are unsuitable for maneuver warfare. Moreover, because they are protected, they require management attention. Range management and operations must consider the impacts of wetlands on current training and testing and must develop range sustainment strategies to accommodate training and testing requirements for evolving operational missions and emerging technologies.

3.4. Training Constraints and Impact Factors

Recent experience at DoD range complexes indicates that encroachment degrades training in the following ways:

- Creates avoidance areas. Encroachment requires military forces to avoid certain areas of land, airspace, or sea space. For example, ground troops may not be able to train in certain areas due to the presence of endangered species; or aircraft may have to avoid certain areas to limit noise. Avoiding these areas can degrade the quality of training.
- Reduces usage days. Training is restricted or prohibited on some days in some areas. For example, Navy ships may not be able to operate in certain areas at specified times because of migrating marine life. Aircraft training may be prohibited at certain times to avoid migratory birds or to avoid interfering with the mating season of certain species.
- Prohibits certain training events. Encroachment may prohibit certain training events. For example, ground troops may be prohibited from digging into the ground to create realistic fighting positions, aircraft may be prohibited from using flares or chaff, and ships may be prohibited from using sonar equipment. In these cases, the training must be conducted at other locations, or work arounds must be developed.
- Reduces range access. Encroachment can reduce access to ranges. For example, encroachment may reduce approaches to target areas to certain specified corridors, rather than permitting access from multiple approaches. Such limitations may degrade the realism and value of the training event.
- Segments training and reduces realism. Encroachment may mean that training events that should naturally follow in sequence, to mirror their occurrence in combat, might have to be segmented in training. For example, aircraft might have to practice ordnance delivery and evasive maneuvers at different times, rather than together. Ground forces might have to practice ship-to-shore maneuvers at one time, and assaults on enemy positions at another. Segmentation of training reduces realism and the value of training experiences.

- Limits new technologies. Concerns about encroachment may limit training with new technologies. For example, encroachment may limit the military's ability to conduct realistic training with unmanned aerial vehicles (UAVs), which are now a standard tool on the battlefield. Limitations on training could very well translate into limited applications in combat, as forces apply technologies as they have in training, and perhaps not to the technology's full potential.
- Restricts flight altitudes. Civilian use of higher altitudes may prevent military forces from taking full advantage of SUA. In training, aircraft may be forced to fly in artificially low altitudes, which reduces realism and may cause pilots to adapt practices that must be "un-learned" in actual combat. In other cases, aircraft may be forced to fly in artificially high altitudes to reduce noise or to avoid obstructions such as cellular telephone towers, power lines, and energy-producing windmills.
- Inhibits new tactics development. By restricting maneuver areas, approaches to targets, altitudes, technologies, and the like, encroachment inhibits the creative development of new tactics.
- Complicates night and all weather training. Community development near training ranges complicates night and all weather training. For example, in combat, we enjoy an overwhelming advantage when we fight at night. Nighttime training, therefore, is essential to force readiness. Nighttime, however, is also the time when residents near military installations are especially sensitive to noise. Voluntary or mandatory restrictions on military training at night, therefore, may foster better community relations, but they pose especially critical limits on militarily essential training.
- Reduces live fire proficiency. Encroachment from community development, endangered species, environmental regulations and other factors reduce opportunities for the use of live fire ordnance, thereby reducing proficiency. While the use of simulation and inert ordnance can replace some live fire training, training with live ordnance remains essential for adequately preparing military forces for combat.
- Increases personnel tempo. Encroachment increases personnel tempo when forces must deploy away from their home station to receive effective training. For example, forces stationed at Fort Lewis, Washington, must conduct essential training at the Yakima Training Center.
- Increases costs or risks. Encroachment can increase costs in a variety of ways. Examples include transportation and other costs for units to train away from their home station when encroachment limits training there; fuel costs for aircraft training missions that must be aborted because of the occasional presence of wildlife in target areas; and the costs of natural resource conservation projects.

3.5. Inventory and Encroachment Summary

Encroachment issues will challenge the Department of Defense for many years to come. Realistic military training will continue to require substantial amounts of airspace, land, water, and frequency spectrum. DoD will continue to serve as a responsible steward of our nation's resources, and to work with stakeholders to provide the sustainable installations and ranges that are essential for training and readiness. We will continue the management improvements that enable these efforts, such as maintaining and improving the inventory at Appendix E, and documenting the effects of encroachment on training and readiness.

4. ADEQUACY OF CURRENT AND FUTURE SERVICE RANGE RESOURCES IN THE U.S. AND OVERSEAS

Today, the Department has good insight into the adequacy of its range resources. As described later in this chapter, each of the Military Services has methodologies and information systems to evaluate range adequacy. Ongoing efforts across DoD and within each of the Military Services will improve upon today's methodologies and processes.

Assessing range adequacy is a complex undertaking. It requires the identification, collection, and analysis of a wide variety of data on factors such as training requirements, capacity, capabilities, encroachment, location, and access. The assessment must consider and balance these and other factors, such as the need to allocate training resources between Service-unique and joint training requirements.

Although the Department has many concerns about range adequacy, in general our range complexes allow military forces to accomplish most of their current training missions. In general, constraints at overseas range complexes pose more difficult encroachment and training challenges, a finding consistent with a recent GAO audit.

Today and in the future, many factors threaten the adequacy of our range complexes, including:

- The encroachment factors and impacts described in Chapter 3, which present enormous challenges to range adequacy.
- The growing need for military forces to train in combined arms and joint operations, especially in large multi-echelon exercises.
- The need to sustain, restore, and modernize range infrastructure, such as scoring systems, targets, and threat emitters.
- New weapon systems and technologies with capabilities that stress the existing training range infrastructure.

The fact that our ranges are generally adequate today is a testament to the cooperation the Department has received from the Congress and many states, Native American tribes, local governments, and nongovernmental organizations. It is also a testament to the dedication of our military and civilian personnel, who have worked hard to ensure that military forces can accomplish their training missions in the face of substantial limitations resulting from encroachment and other obstacles.

In the future, the adequacy of our range complexes will erode without substantial efforts to address encroachment, adequate investments in our training range infrastructure, robust range sustainment programs, and the continued cooperation of others. We must work together to preserve the adequacy of our range complexes. If we fail to do so, the resulting impacts on military readiness will be unacceptable. The next sections address the adequacy of the Military Services' range complexes.

4.1. Army

Although the Army carries a large inventory of ranges and training land, there are substantial shortages of key "modernized" or "automated" ranges. Based purely on range count, the Army carries significant overages of range facility types. This is attributable to a large number of older ranges that do not fully meet current doctrinal requirements. The large number of small arms ranges also addresses the Army's need to accommodate its Reserve Component training requirements by minimizing time and distance

requirements from armories and centers to ranges. In addition, the Army conducts training with substantially less maneuver area than required by established standards.

In addition to an assessment of whether or not the Army has adequate numbers of ranges and acreage of maneuver land, it is necessary to examine the condition of those assets to determine whether the ranges and land adequately meet the Army's mission requirements. The Army developed the Installation Status Report (ISR) in 1994 as a way to assess installation level conditions and performance against Army-wide standards. Data is provided annually from all Army installations to develop a three-part report consisting of Infrastructure, Environment and Services. To report these ratings the ISR uses the familiar "C" rating system similar to the Unit Status Report (USR).

Appendix J contains the condition rating for the categories of range facilities as assessed in the 2002 ISR report. When taken in conjunction with delta between the number of ranges on hand and the requirement for ranges, the condition ratings provide a better indication of the adequacy of the Army's range and land assets. The condition ratings are summarized in Table 4-1.

Condition Rating	Number of Range Categories by Condition Rating in 2002 Army Installation Status Report Part 1
C1	0
C2	7
C3	21
C4	7
Total	35

Table 4-1: Summary of Condition Ratings for Range Categories from 2002 Installation Status Report

NOTES:

C1 = Almost all ($\geq 95\%$) required facilities on hand; meets unit/activity needs and Army standards; very minor, if any function deficiencies; infrastructure fully supports mission performance.

C2 = Most ($\geq 80\%$) required facilities on hand; meets unit/activity needs and partly meets Army Standards; minor functional deficiencies; infrastructure supports majority of assigned missions.

C3 = Majority of ($\geq 60\%$) required facilities on hand; meets majority on unit/activity needs; does not meet Army Standards; some functional deficiencies; impairs mission performance

C4 = Less than 60% of required facilities on hand; facilities do not meet unit/activity needs or Army Standards; major functional deficiencies; significantly impairs mission performance.

Overall, 28 of the 35 range categories have some or major functional deficiencies, do not meet Army standards, or impair or significantly impair mission performance. The range categories with the lowest condition ratings are field fire ranges (automated and non-automated); field artillery direct fire ranges; tank/fighting vehicle scaled gunnery ranges; tank/fighting vehicle stationary gunnery ranges; engineer qualification ranges (non-standardized and automated/standardized); infiltration courses; and aerial harmonization ranges.

4.2. Navy

The Navy is developing a systematic approach for evaluating the adequacy of its range resources. Two parallel efforts are well underway that will result in range complex specific assessments of range assets. One effort is the development of a range evaluation tool to facilitate range management decision-making and to ensure that the Navy maintains adequate range resources to train Naval forces. In addition, the Navy has initiated a program to develop RCMPs at all training range complexes, and a key component of

each RCMP will be an analysis of range encroachment and its impact on training. RCMPs will also include the measures and resources needed to address encroachment and resultant training impacts.

4.2.1. Methodology

The Navy is using the Center for Naval Analysis (CNA) to develop a methodology for quantifying training range support for readiness and to identify the role that encroachment plays in degrading necessary training. To initially develop an encroachment methodology for OSD, CNA studied a Carrier Air Wing training event occurring on a portion of the Fallon Range Training Complex. The Navy actively supported the OSD effort and has subsequently employed CNA to develop more fully the approach and to provide an analytical tool to determine range adequacy. The CNA approach consists of a skills-based range resource assessment that focuses on the Navy Warfare Areas and the resulting effects from encroachment. The assessment of each range complex will capture lost training due to insufficient resources.

4.2.2. Analysis

A methodology has been developed and approved, and a prototype evaluation conducted. The next step in the development of the skills-based plan is to apply the methodology across one entire warfare area on all the ranges of the West Coast of the United States. As part of this practical application, CNA will develop an analytical tool that upon completion will be provided to the Fleet commands in order to allow them to apply the methodology across all warfare areas and range complexes. RCMPs will also address constraints.

4.3. Marine Corps

Marine Corps combat readiness depends on continued provision of realistic, mission-oriented training by ranges and training areas. The Marine Corps has identified six Cornerstone Objectives for transforming ranges and training areas: (1) preserve and enhance the live-fire combined-arms training capabilities, (2) recapture MAGTF and unit-training capabilities, (3) leverage technology to support every level of training to provide timely and objective training feedback, (4) honor commitments to both environmental protection and military readiness, (5) ensure training complexes are available to, and capable of supporting Joint forces, and (6) guarantee pertinent common range infrastructure and systems architecture to support the JNTC.

4.3.1. Range Planning and Management

The Marine Corps Sustainable Ranges process integrates “all functional elements of installations and range and training area management, which provide for the Marine Corps bases’ and stations’ long-term viability and ability to support realistic training.” Analytical tools for range assessment currently in use or scheduled for development include:

Commanding Officers Readiness Reporting System (CORRS)

This system is designed for facility condition and readiness reporting to improve resource management for installation readiness needs. CORRS assesses installation conditions using Marine Corps-wide standards and estimates resource requirements, and it articulates Marine Corps needs through program and project prioritization and resource allocation assistance. CORRS assesses installation mission

capabilities in terms of both training range quantity and quality. Appendix K summarizes the 2002 CORRS results.

Range Complex Management Plans (RCMPs)

These documents will provide range complex descriptions, characterize training operations, and develop a 10-year range operations strategic vision. The process will (1) identify and analyze encroachment and sustainment challenges, (2) outline range complex sustainable management practices, and (3) identify investment needs for sustaining, upgrading and modernizing ranges.

Range Environmental Vulnerability Assessment (REVA)

The REVA process will evaluate areas in operational ranges potentially vulnerable to regulatory action due to potential human health and environmental threats. REVA supports compliance with Department of Defense Directives 4715.11 and 4715.12, Environmental and Explosive Safety on Operating Ranges, and the FY04 Defense Planning Guidance. REVA is analogous to the Navy's Range Sustainability Environmental Program Assessment (RSEPA) and the Army's Regional Range Study Program.

A primary purpose of REVA is to afford robust environmental assessment and range complex management planning. Potential range vulnerabilities across a broad spectrum of environmental and encroachment issues will be assessed. To discharge these responsibilities, the Marine Corps has initiated a Training Range Real Property Analysis as part of a broad assessment of Marine Corps real property management programs. The Training Range Real Property Analysis Study goals are to (1) review current training range real property management, (2) include category codes revisions, management criteria, and inventories, and (3) recommend improved asset visibility, sustainment and criteria development.

Range Management System (RMS)

This system is a scheduling, reporting, and training management tool that allows for assessment and management of encroachment concerns, range modernizations, and investments. This system will also be the backbone of the Safe Range System, an automated aviation ordnance "footprint" tool used to orchestrate training events and safe range operations. Plans for the RMS also include relating range and training area capabilities and limitations to the T&R program, which provides commanders with a standardized format for training, reviewing and revising, and promulgating their training standards. This enhancement will allow the RMS to quantify and relate range value to operational readiness.

Range Facility Management Support System (RFMSS) 2002

This system includes real-time airspace management and GIS modules and improves reporting and range management modules. It will provide a powerful tool to schedule training, assess training resources, and plan range improvement and investment.

4.3.2. Range Transformation: Sustainment, Upgrading, and Modernization

The Marine Corps aggressively supports the RRPI. Through RRPI, Congress paved the way for the Military Services to acquire buffer lands to combat encroachment and preserve the operational viability of the Marine Corps bases. Under the "encroachment partnering" authority provided through "Agreements to Limit Encroachments and other Constraints on Military Training" (10 U.S.C. section 2684A), the Marine Corps already has achieved notable progress in partnership with various non-governmental organizations. Buffer lands conservation forums have been formed and acquisition efforts are underway

at Camp Lejeune and Camp Pendleton. Similar forums are also being formed at MCAS Beaufort, Townsend Range, GA, and MCB Quantico.

4.4. Air Force

4.4.1. Current

There are several key conditions that must be met for a range and its associated airspace to be considered adequate to meet test and training requirements:

- The range should be close enough to the aircrew's installation to avoid or minimize the need for refueling during a mission.
- The range and airspace configurations must be conducive to the testing or training task (i.e., appropriate horizontal and vertical dimensions).
- The range must have the appropriate infrastructure (i.e., if the task is to simulate action against an IADS, the range needs to have an appropriate mix of threat emitters).
- There should be no externally imposed constraints on operations that preclude accomplishment of the mission.
- The range must have sufficient total and daily operating hours to allow accomplishment of all tasks.

Over the last few years the Air Force has been increasingly concerned about the adequacy of ranges to meet testing and training requirements. In 2000, Air Combat Command, concerned about the increasing competition for use of a limited infrastructure, saw a need to begin to shift from deficiency-based approach for determining range and airspace infrastructure needs to a requirements-based approach. One of the first efforts along these lines is documented in the 2001 RAND Corporation report titled *Relating Ranges and Airspace to Air Combat Command Missions and Training*. That report is one of the first attempts to relate missions and training requirements to the supporting infrastructure through comparison of existing training requirements to existing training resources.

The study found that while all current annual air-to-air sorties can be flown in the area near installations without refueling, for fighter air-to-ground sorties, 19 percent exceeded the maximum free cruising distance (MFCD). The analysis suggests that exceeding the MFCD is an indicator that those aircrews are receiving reduced training value.

With respect to bomber aircrew training, it was determined that the bomber aircrews at Barksdale AFB, Ellsworth AFB, and Minot AFB have no convenient access to a range to deliver live weapons. For this reason, these crews rely on simulated drops against electronic scoring sites.

The Combat Air Forces (CAF) *Mission Support Plan (MSP)* evaluates Air Force ranges to determine how well each range meets MDS-specific training requirements. Criteria for evaluation include the types of targets and ordnance available for use on a given range and the capability of the range to simulate attacking an IADS. In general, this evaluation shows that all Air Force ranges except the Nevada Testing and Training Range have at least one constraint that has an impact relatable to a specific training requirement.

In addition to the information from the *CAF-MSP*, input was sought from the MAJCOMs via a questionnaire sent out in July 2003. In the responses from the MAJCOMs, 31 cases of encroachment constraint were identified as affecting operations at Air Force ranges in the U.S.

4.4.2. Future

Urban expansion and population growth around ranges and installations place predictable constraints on Air Force operations. Training can be affected by transportation infrastructure (especially air transport), advances in telecommunications (which affect the available communications bandwidth), and quality of life issues (such as noise and environmental impacts).

The Air Force also has an ongoing initiative to evaluate the potential for constraints being imposed on testing and training ranges. This effort, application of a methodology referred to as the *Resource Capability Model*, seeks to quantify requirements in terms of the resources required, and then compare that requirement to the resources available to meet that requirement. Using the model, constraints can be described in sufficient detail to allow for action to attempt to resolve the limitation. This model has been pilot-tested at several Air Force installations, and additional installations will be evaluated in the coming year. As appropriate, information from these evaluations will be presented in subsequent reports.

The Air Force's review of overseas ranges is still underway. Therefore, an adequacy evaluation would be premature. Results of the evaluation will be published in subsequent Section 366 and 320 reports.

5. COMPREHENSIVE PLAN TO ADDRESS TRAINING CONSTRAINTS

The Department is developing and implementing comprehensive plans to address training constraints. Under Title 10 of the United States Code, the Military Services have principal responsibility for training military forces and for training range complexes. It is appropriate, therefore, for the Military Services to develop and implement comprehensive plans that best meet their needs, while ensuring an appropriate amount of consistency. This is precisely the approach that DoD is undertaking.

DoD Directive 3200.15, "Sustainment of Ranges and Operating Areas," establishes requirements for comprehensive and integrated planning for the sustainment of range complexes and operating areas. The directive states that it is DoD policy that the planning process incorporate considerations from all relevant functional offices, including installation, range, OPAREA, munitions management, and range users, as well as environmental, legal, public affairs, safety, and medical staff. Among other things, the Directive requires the Under Secretary of Defense for Personnel and Readiness to provide guidance and oversight, and the Military Services and other DoD Components to prepare management plans for range complexes and OPAREAs. Conducting outreach to promote range sustainment and resolve encroachment issues is a key element of DoD policy and the range management plans.

The Department recognizes the importance of making sure that the Service plans address requirements for joint training. Oversight by the Under Secretary of Defense for Personnel and Readiness and reviews by the SROC, the Sustainable Ranges IPT, and the Sustainable Ranges Working IPT ensure that joint issues are addressed in the plan development process.

The Military Services are carrying out the planning required by the Directive. Each Service is implementing a planning process that is best suited to its requirements and ranges. Although the specific approaches differ, the general characteristics of the Service planning processes are similar. The planning processes establish Service-level program priorities and require detailed, structured reviews of individual installations, range complexes, and OPAREAs. The intensive reviews are carried out in a phased approach. The Services are defining investment priorities for sustainment, modernization, and other range related issues on the basis of the programmatic reviews and assessments of individual range complexes and OPAREAs.

5.1. Army

The Sustainable Range Program (SRP) is the Army's overall approach to improving the way it designs, manages, and uses its ranges to meet its Title 10 training mission. The SRP has two core programs: the RTLP and ITAM. The SRP core programs are integrated with the facilities management, environmental management, munitions management, and safety program functions that support the doctrinal capability to ensure the availability and accessibility of Army ranges and training lands.¹⁵

To ensure that it sustains a trained and ready force, the Army must improve the way in which it designs, manages, and uses its ranges to meet its Title 10 responsibilities. The foundation for this improvement is the strategy contained in the SRP. The SRP is the roadmap that advances the Army from its current range management performance levels to improved performance levels. The SRP is founded on three tenets:

¹⁵ Within the Army Test and Evaluation Command (ATEC), SRP is defined by its test ranges and ITAM programs and is similarly integrated with the programs described in the preceding statement.

- **Information Excellence.** Information excellence ensures the Army has the best available spatial and temporal data and science to support the operational, environmental, and infrastructure characteristics of its ranges and land assets. Information excellence also includes an increased understanding of the impacts of the Army's live-fire operations on the environment.
- **Integrated Management.** Integrated management ensures that the major management functions directly affecting ranges and land assets (i.e., operations, facilities, and environment) are integrated to support the training and testing missions.
- **A Dedicated Outreach Program.** A dedicated outreach program educates the public on the need for live-fire training and improves the Army's understanding of public concerns related to Army training and range operations.

The SRP goal is to maximize the capability, availability, and accessibility of ranges and training land to support doctrinal training and testing requirements, mobilization, and deployments under normal and surge conditions.¹⁶ Eight objectives support the SRP goal.

- **Objective 1 – Range Facilities.** Modernize training and testing range facilities to sustain live training execution in accordance with OPTEMPO, Flying Hours Program, STRAC, and other training strategy requirements through military construction (MILCON) investments, New Missions, Revitalization, and the Army Facilities Strategy.
- **Objective 2 – Range Operations.** Resource range and training land operations.
- **Objective 3 – Range Maintenance.** Sustain range and training facilities. DAMO-TRS is the lead for ITAM Land Rehabilitation and Management (LRAM) and range operations maintenance that includes repair of targetry and equipment.
- **Objective 4 – Encroachment.** Maximize the accessibility of ranges and training land by minimizing restrictions brought about by encroachment factors.
- **Objective 5 – Environmental Responsibilities.** Focus the capability of the environmental program to fully support force readiness by sustaining the accessibility of ranges and training land.
- **Objective 6 – Outreach.** Develop and implement the SRP Outreach Program to improve public and stakeholder understanding of the Army's live training and testing requirements and clearly articulate and underscore activities supporting national security.
- **Objective 7 – Integrated Management.** At all echelons of the Army, establish an interdisciplinary approach to sustainable range management that integrates operational, facilities management, environmental, and safety functions.
- **Objective 8 – Professional Development.** Establish a multi-disciplined career program for range operations personnel that supports sustainable range management.

¹⁶Within SRP: Capability refers to the SRP core functions – the RTL and ITAM program; Availability refers to the non-environmental facility management functions; Accessibility refers to the environmental compliance and management functions.

5.1.1. The Range and Training Land Program (RTLTP)

RTLTP, under the management of HQDA G-3, DAMO-TRS, provides a range operations and modernization capability for the central management and prioritization and the planning and programming of live-fire training ranges and maneuver training lands, including the design and construction activities associated with them.

The RTLTP planning process integrates mission support, environmental stewardship, and economic feasibility and defines procedures for determining range projects and training land requirements to support live-fire and maneuver training. The RTLTP defines the quality assurance and inspection milestones for range development projects and the standard operating procedures (SOPs) to safely operate military training, recreational, or approved civilian ranges under Army control and support commanders' METL and Army training strategies. RTLTP also establishes the procedures and means by which the Army range infrastructure is managed and maintained on a daily basis in support of the training mission.

HQDA G-3, working with the SRP Executive Agent, also maintains the Army Master Range Plan (AMRP), which serves as the prioritized list of Army-approved range and training land projects.

5.1.2. The Integrated Training Area Management (ITAM) Program

The ITAM program, under the direction of DAMO-TRS, provides Army range managers with the capabilities to manage and maintain training and testing lands by integrating mission requirements derived from the RTLTP with environmental requirements and environmental management practices. The goals of the Army's ITAM program are to:

- Achieve optimal sustained use of lands for the execution of realistic training and testing by providing a sustainable core capability that balances usage, condition, and level of maintenance.
- Implement a management and decision-making process that integrates Army training and other mission requirements for land use with sound natural resources management.
- Advocate proactive conservation and land management practices by aligning Army training land management priorities with the Army training and readiness priorities.

5.1.3. Resource Enhancement Proposals

The Army Range and Training Land Strategy provides a framework for analyzing and addressing current and future range and training land shortfalls. The strategy provides the Army with a framework for ensuring the long term sustainability of its training land and ranges in light of Army Transformation, Training Transformation, encroachment, and the Army Stationing Strategy. The Range and Training Land Strategy serves as the mechanism to prioritize investments to installations based on mission and doctrinal training requirements. It provides a framework and methodology to identify priorities for range modernization, training land acquisitions, and compatible land use buffers.

The Strategy is based on a structured methodology for assessing mission factors to assess installations' relative value to the Army, training transformation factors to assess training transformation opportunities, and installations capacity to expand. It recognizes the need to transform and selectively modernize home

station training in light of the limited capacity of the Army's three major combat training centers.¹⁷ To maximize the usefulness of the Army's training land and ranges, the Strategy also focuses on investments that can increase their flexibility, effectiveness, cost-efficiency, and throughput.

Since very few Army installations can meet the maneuver requirements of the FF UA, it is necessary for the Army to adopt a strategic view of its available training lands and determine where installations can acquire lands and how multiple installations can be leveraged, to include other Service installations to meet future training requirements. The Army must also look to further integrate the live training environment with virtual and constructive technologies to provide sustainment training. The Strategy provides the framework and a long-range plan to meet the doctrinal training land challenges of today and the future.

The Army is taking several steps to prevent incompatible resource allocations and uses near ranges. The compatible land use buffers authorized by Section 2811 of the National Defense Authorization Act for Fiscal Year 2003 provide the Army with an important tool for addressing incompatible land use, range sustainability, and protecting existing and future investments. To support the Strategy and implementation of the law, the Army developed a methodology to evaluate installations' ability to benefit from such buffers and provide a prioritization of those installations.

First, the Army is continuing a strong management emphasis on its SRP. The Army uses an IPT approach at all echelons to focus and coordinate efforts to support sustainable ranges. At headquarters, the Army Range Sustainment Integration Council (ARSIC) supports range sustainability and develops and implements the SRP. The ARSIC includes representatives from several Army offices, from installations and environment to safety and command, control, communications, and computers, to ensure the integration of range sustainment and mission accomplishment. Among other things, the ARSIC continuously reviews the SRP objectives and their status to determine their sufficiency and adequacy for achieving SRP goals. Similar IPTs exist at the MACOM, IMA, IMA region, and installation levels.

Second, the Army embeds planning or sustainable ranges in standard installation planning processes. The Army ensures that coordinated installation planning takes into account the need for sustainable ranges.

Third, the Army is developing new information tools and applying existing information tools to facilitate compatible use, and thereby prevent incompatible uses. For example, the Army is developing an automated range development plan, which will provide installations with a more robust decision making capability by graphically displaying range and training land requirements along with all installation requirements that impact the mission. Other tools used include the Installation Training Capacity, Environmental Climate Model, and the Installation Status Report systems.

The Army has developed goals, milestones, planned actions, and progress metrics for the SRP. The goal of the SRP is to maximize the capability, availability, and accessibility of ranges and training land to support doctrinal training and testing requirements, mobilization, and deployments under normal and surge conditions.

The Army has developed metrics and milestones for eight objectives: range facilities, range operations, range maintenance, encroachment, environmental responsibilities, outreach, integrated management, and professional development. Army analyses validate critical training land shortfalls at nine installations that have some land available for acquisition. These installations are constrained by factors that prevent them from meeting the FF Maneuver Requirements. However, these installations are of strategic importance to

¹⁷ The CTCs are the National Training Center at Fort Irwin, the Joint Readiness Training Center at Fort Polk, and the Combined Maneuver Training Center in Germany.

maintaining readiness and the Army will pursue acquisitions at these installations to enhance existing capabilities and ensure their future viability. The nine installations are Fort Polk, Fort Bragg, Fort Stewart, Fort Hood, Fort McCoy, Fort Campbell, Fort A.P. Hill, Fort Drum, and U.S. Army, Hawaii. The Army recognizes the importance of local interests and will work with community leaders to provide the best local solutions to meeting the Army's and the community's needs.

The Army is developing additional scoring systems, targetry, and instrumented range suites to maximize live training value and allow integration of the virtual and constructive training environments.

The Army is making a variety of investments in its range operations. It is fielding and enhancing the Range Facility Management Support System (RFMSS), which provides automation of accurate tracking of training assets and utilization. It is making extensive use of geographic information systems to create, analyze, display, and print information about ranges and training lands. The Army is developing the Automated Range Development Plan to provide installation training land and range managers a decision support tool for strategic, mid- and near-term planning and management.

The Army needs highly trained range managers to (1) replace an aging workforce preparing to retire, (2) manage ranges of increasing complexity, and (3) manage new requirements of the Army Range Modernization Program and the FF. To provide highly trained range officers and training land managers, the Army is implementing an education and training program with tremendous flexibility to support the Army training community with skills needed to manage training ranges now and into the future.

Army installations are developing and implementing Munitions, Unexploded Ordnance, and Range Residue Management Plans to ensure that ranges remain capable, accessible, and available to meet requirements. The plans address munitions requirements; issuance, receipt, accountability, and turn-in; recording of munitions expenditures; explosives safety; operational range clearance; restrictions; and other munitions management issues. In addition, they will support and be integrated with other installation range management efforts.

Army installations are required to assess safety hazards associated with military munitions, including procedures to manage UXO hazards on ranges. Ranges identify and maintain permanent records of areas known or suspected to contain UXO. Army installations must maintain permanent records of all locations of UXO removal operations, explosives ordnance disposal (EOD) incidents, and open burn and open detonation (OB/OD) operations. Access to areas known or suspected to contain UXO is prohibited, except to authorized personnel for specific range-related purposes. Army installations remove UXO from ranges where access is necessary, in accordance with safety and other relevant requirements.

Army installations are required to periodically clear operational ranges of military munitions (i.e., UXO and munitions debris) and other range-related debris to allow safe access to range areas for range maintenance, modernization, training, or testing operations; preclude accumulation of used military munitions (e.g., UXO) and other range-related debris that would impair or prohibit the continued use of the range for its intended purpose; or facilitate reasonably anticipated future land uses if all or a portion of the range has a finite end-use date. (e.g., as stipulated in a lease agreement, land withdrawal language, or other land use agreement).

The Army continues to modernize and restructure in fulfillment of Transformation. The Range and Training Land Strategy establishes broad prioritization for live fire training investments. Range and training land requirements for the FF will be addressed as stationing and systems information becomes available. As requirements are analyzed, MACOMs must ensure ranges and training lands can be managed and maintained for long-term sustainability.

Environmental support for ranges and training land is established through the use of a cross functional network of programs supporting the long-term sustainability of training lands. The Army Environmental Program renders direct and focused environmental support to the Army's range operations.

The Army is implementing the SRP Outreach Program to equip Army personnel with the skills to improve public understanding of the Army's live training mission and its importance to readiness. The Army recognizes the importance of effective outreach to stakeholders.

5.2. Navy

5.2.1. Resource Enhancement Proposals

The Navy has a well-established, funded program to identify training constraints and ensure sustainable range management. In 2001, the Navy began building the TAP, a five-part Fleet training range-sustainment program. The Navy range sustainability program is designed to ensure the Navy maintains access to its existing ranges and OPAREAs and can expand the capabilities of range/OPAREA infrastructures to continue to support the training requirements of evolving missions, tactics, and technologies. TAP focuses on integrated planning and management to ensure training assets meet critical future mission support capabilities, and provides a systematic investment strategy for Navy training ranges/OPAREAs to achieve sustained Fleet readiness.

The following are TAP's five components and their functions:

- **Range Complex Management Plans (RCMPs).** RCMPs address long-term sustainable use, management procedures, and record keeping to support current and future operations. All collected data will adhere to standardized formats (GIS, ACCESS) to ensure future compatibility with a proposed Navy range management system. The RCMPs include:
 1. Complete description of all training areas
 2. Comprehensive baseline of current range operations
 3. Strategic vision on 10-year planning horizon
 4. Analysis of encroachment and sustainment challenges
 5. Environmental planning requirements
 6. Community involvement blueprint
 7. Range investment strategyRCMPs were initiated for the Cherry Point (in coordination with the Marine Corps) and Southern California complexes in FY-2003. RCMPs for all training range complexes will be initiated by FY-2006.
- **Marine Species Density Data (MSDD).** The MSDD compiles existing marine species information and collects new information through surveys to determine marine species population densities in OPAREAs. This population density information is required to make accurate assessments of potential impacts to marine species from planned training operations. The development of MSDD for all Navy OPAREAs will be coordinated with the Fleet Commands and OPNAV to ensure consistency in (1) outreach and coordination with the regulatory community, (2) the methodology/ algorithms used to extrapolate literature and citing data for calculating densities, and (3) maintenance of all data in a centralized data repository.

Marine Resource Assessments (MRAs) are the first step in the process and consist of in-depth literature reviews of existing information that focus on ocean areas where Navy routinely trains. MRAs have recently been completed for many East Coast OPAREAs to support development and/or updates of comprehensive environmental planning documentation. MRAs were completed during FY-2003 for the Key West, Virginia Capes, Cherry Point, and Jacksonville complexes.

- **Operational Range Clearance (ORC).** ORC establishes a plan for routine clearance and disposal of UXO/munitions and target debris, and maintains operational ranges by minimizing potential for possible future contamination. The resources available through the range-sustainment program are in addition to the clearance currently conducted at Navy training ranges to maintain the safety of the range.
- **Environmental Planning (NEPA).** Implementing the RCMP may trigger environmental planning requirements. The environmental planning will be conducted and documented as required by the NEPA or Executive Order (EO) 12114 for action occurring overseas. Integrated operational and environmental planning is essential to ensuring that operations and maintenance of ranges and OPAREAs are conducted in a manner that is (1) protective of human health and the environment, (2) consistent with current and future readiness requirements, and (3) compliant with existing environmental legal requirements. A large part of the environmental planning effort will be to ensure that all required supporting studies and analysis of training operations under NEPA and EO 12114 are current.
- **Range Sustainability and Environmental Program Assessments (RSEPA).** The RSEPA program will determine environmental impacts of munitions use on Navy ranges, address issues of land-based range compliance and the potential for off-range release of munitions constituents. The primary goals of the RSEPA process are to (1) identify and eliminate the potential for off-range impacts to human health and the environment, (2) comply with applicable laws and regulations, and (3) actively engage regulators and build public confidence.

The Navy has developed protocols and policies for implementing the RSEPA program that are being tested through three prototypes applications at SOCAL, San Clemente Island Range Complex (SCIRC); Fallon Training Range Complex (FTRC); and Virginia Capes (VACAPES) in FY-2003. Two more range complexes will initiate the RSEPA process in FY-2004.

5.2.2. Analyze Shortfalls

As the range analysis tool under development by CNA (discussed in Section 3.1) is put into use on all the complexes, the Navy will identify ranges' shortfalls with regard to providing training, now and in the future. The RCMPs will include investment strategies for each range to prioritize their resources to meet the shortfalls encountered. These two tools will provide ranges and Navy leadership the ability to identify and address training shortfalls.

5.2.3. Prevent Incompatible Resource Allocations and Progress Metrics

The Encroachment Partnering program, authorized in the FY-2003 Defense Authorization Act, allows the military to enter into land use agreements with local governments and non-Governmental organizations. The Encroachment Partnering program can aid in providing buffer areas for ranges by preventing commercial development and protecting military use of the range. The Navy is preparing an instruction delineating responsibilities for this program. Constraints resulting from incompatible land use and other causes will be identified through the development of the RCMP and an appropriate remedy identified.

5.2.4. Goals and Milestones for Planned Actions and Progress Metrics

The Navy Range Sustainment Program as implemented through TAP is phased across the Future Year Defense Program (FYDP), and as the programs are developed they put in place a consistent system across the Navy. The Implementation Plan starts the process at two range complexes per coast each year, with high-use complexes scheduled first. The next milestone is to execute the program at the four training range complexes identified for FY-2004.

Many goals and milestones have already been achieved. Policy for preparing environmental documentation for training range complexes is being finalized. The policy for conducting the RSEPA process is final. The Navy Fleet commands have funded the completion of several Marine Resource Assessments (MRAs), have funded initial efforts to develop a Navy-wide Range Management System, have initiated field-testing of the RSEPA process, and have funded development of two prototype RCMPs. The Navy program is well under way.

5.2.5. Planned Action Funding Requirements

The Navy's range-sustainment program TAP, discussed in Section 4.1, is included in the President's Budget for FY-2004 and is currently funded at \$98.9M across the FYDP. This cost will continually undergo assessments as the results of the RSEPA program and the implementation of the RCMPs discussed in Section 4.1 are completed through the FYDP.

5.2.6. Current and Future Service Investment Strategies

The Navy will continually update the training range investment strategy as it prepares the RCDs generated under the RCMP portion of TAP. These range-specific investment strategies will delineate what infrastructure and technology the ranges require to support specific warfare area training during the three levels of the IDRC. These strategies will provide prioritized resource allocation structures for seven RCMP investment categories: air, land, and water; instrumentation; targets and target arrays; range operations; facilities; environmental; and outreach.

5.3. Marine Corps

Assessing the adequacy of Marine Corps training resources is an ongoing process involving multiple variables, including range capability, range capacity, range location, and access (relative to other assets). The process is complex, in that assessment metrics for these variables are only just emerging (as with the Marine Corps's encroachment studies), or may be quite difficult to develop. The Marine Corps has identified five priority concerns regarding shortfalls in the Marine Corps range complex portfolio: (1) lack of training ranges to support MEB-level fire and maneuver exercises, (2) lack of a MAGTF (MEB-level) MOUT facility, (3) inadequate instrumentation/feedback systems and targets, (4) constrained maneuver space at littoral training bases (Cam Lejeune and Camp Pendleton), and (5) antiquated school training facilities.

Overall the Marine Corps's T&E continuum and its supporting programs are equipped to accomplish their mission. Nevertheless, the Marine Corps has areas of significant concern. Specifically, the Marine Corps needs to upgrade existing ranges and facilities—particularly combined arms training ranges—and invest in new range instrumentation, targets, and simulation technologies. Some range complex configurations are not optimal for today's training requirements or future weapon systems and may lack sufficient space for unconstrained MAGTF training. TECOM (RTAM) recently initiated a Marine Corps-wide range requirements assessment that produced a Marine Corps RCD, including a set of unconstrained current and

anticipated range training requirements. The RCD, to be completed in the first quarter of FY04, will supply information integral to range transformation efforts.

5.3.1. MEB Training Area Initiative & MAGTF MOUT Facility

Marine Corps Strategy 21 and *Expeditionary Maneuver Warfare* describe and define the Marine Corps' mission to provide combatant commanders with scalable, interoperable, combined arms MAGTFs that can quickly deploy and operate in an expeditionary environment across the spectrum of conflict. These capstone concepts also identify MAGTFs as the primary Marine Organizations that fulfill its warfighting responsibilities and designate the MEB as the Marine Corps's premiere response force for smaller-scale contingencies. However, the Marine Corps does not have a range capable of supporting MEB-level fire and maneuver combined-arms exercises.

MAGTFs supporting Operation Enduring Freedom conducted sustained combat operations in an extended Joint Operations Area spanning over 650,000 square miles nearly 400 miles from their sea-based logistics bases. In the current national security environment, the employment of MEBs in support of joint operations under similar conditions is more likely than ever. However, the Marine Corps lacks a training facility capable of supporting all MEB (or MEF) elements realistically. The Marine Corps's largest training facility, the Combat Center at 29 Palms, accommodates only MEU-sized MAGTF and MAGTF element Battalion Landing Team (BLT) training. Thus, MEB commanders, staffs and subordinate commanders must rely on unrealistic classroom training, command post exercises and simulation. Therefore, the Marine Corps is initiating planning for a MEB training facility that will provide sufficient space and infrastructure to train large MAGTFs, to optimize MEB effectiveness and utility in the Joint environment.

MEBs must be versatile, across the spectrum of conflict, both tactically and operationally. The MEB must be prepared for littoral operations, which increasingly are characterized by highly populated urban areas. Urban environments present conventional enemy forces and asymmetric threats, non-linear battlefields, and unclear delineations between combatants and non-combatants. To operate effectively, the MEB (or other MAGTF) must conduct fluid, maneuver intensive operations over extended distances, employ closely coordinated, precision fires, and sustain organic logistical support. In parallel, as new systems (e.g. the Expeditionary Fighting Vehicle, MV-22 Osprey, and High Mobility Artillery Rocket System) become operational, EMW concepts such as Ship-to-Objective-Maneuver will mature into core MAGTF capabilities. These and other systems with new operational concepts will expand the joint battlespace by increasing maneuver range and target engagement distances.

Successful integration of MEB elements can only be achieved through training that replicates operating conditions the MEB may encounter. To ensure MEBs are fully trained and capable, the Marine Corps requires a MEB training facility with sufficient contiguous training area to conduct full-scale MEB. Required capabilities of a JNTC-integrated MEB Training Facility include:

- Support day and night live-fire air and ground maneuvers on a MEB scale for extended exercise periods.
- Allow deep-battle shaping operations by providing ample space for aviation and strike and fire assets.
- Provide MEB live-fire/maneuver areas for current and future fire capabilities for a five-day exercise.
- Provide ample maneuver area for sustained, long-range logistics operations in a rear battle environment.

- Provide easy access to troop concentrations to facilitate deployments and minimize transportation costs.
- Provide virtual scenario simulation with digital linkage to other (Joint) training centers.
- Provide modernized targets, position-location and feedback systems, and live-fire ranges.

The Marine Corps's ranges do not have the capability to support MAGTF training in the urban environment, which is one of the defining operational contexts for its training continuum. Developing a MAGTF (MEB-level) MOUT facility is a high priority. By the year 2025, up to three-quarters of the world's population will live in urban areas, the majority of them in the world's littoral regions. Preparation to conduct complex military operations in urban terrain is, and for the foreseeable future will remain, a core requirement for MAGTF mission readiness. Operations in urban terrain must be expected to range across the spectrum of conflict, from Humanitarian Relief / Disaster Relief and other MOOTW, to smaller-scale contingencies, to Major Theater War. To effectively prepare for urban operations, MAGTFs must conduct large-scale urban combined-arms operations as part of a Joint force.

The Marine Corps must improve its urban combat training capability. Existing urban training facilities can only effectively support individual and small unit tactical ground force training and individual skills training for attack pilots, and lack support for combined-arms training. The Marine Corps requires, but lacks, a realistic MAGTF training area. Analysis and requirements development for establishing a MAGTF MOUT training capability are underway via the EFDS. Combined with the MEB facility, the MAGTF MOUT training facility will provide:

- Training operations that integrate and exercise all elements of the MEB.
- Training various urban combat settings and scales, and enable combined arms exercises for all MEB elements, including infantry company-level urban combat live-fire training.
- Adequate area within individual MOUT components and within the entire MOUT envelope that considers the total battle space geometry required for MEB-level operations.
- An environment that replicates the conditions, challenges, and uncertainties of urban warfare.
- Diverse elements and features to achieve training objectives for units of various sizes.
- Sustainability and cost considerations in building and configuring MOUT components and elements.
- Targets and feedback systems for maximum training effectiveness.

According to operational doctrine (FM 3-06.11, Combined Operations in Urban Terrain), in offensive operations an infantry company would have an attack frontage of one city block. Depending on the training scenario, the ground combat element (GCE) of a MEU(SOC) would have an attack frontage of up to three city blocks. The GCE of a MEB would then have a frontage of from six to nine city blocks. Combined-arms doctrine would require training space to accommodate offensive ground force operations including supporting fires, and the air combat element in assault and close air support roles. Such capability advances will require substantial resources.

5.3.2. Range Instrumentation and Targets and Antiquated School Facilities

Increasing training range value by upgrading and modernizing inadequate instrumentation, feedback systems, and targets is a priority, for all training levels, and for Joint training and JNTC participation. Requirements include: (1) multi-site, training evolutions combining units from various bases and technology investment linking live, virtual, and constructive training to enhance MAGTF elements, (2)

range instrumentation and targets to provide timely and objective training feedback, (3) integrated position-location indicator systems to ensure maximum training efficiency and effectiveness, and (4) common range infrastructure and systems architecture supporting the JNTC.

The Marine Corps's school training facilities are a collection of the new and old structures. Many schools are pre-WWII structures or 1940's era temporary metal buildings. While this has not prevented training requirement achievement, many schools lack technological resources needed for effective instruction. Funding for a new Basic Reconnaissance Course training facility at Expeditionary Warfare Training Group Pacific in San Diego was approved and is proposed for new Recruit Training facilities at MCRD Parris Island.

The Deputy Commandant for Installations and Logistics (DC I&L) is the Marine Corps Advocate for the Supporting Establishment in the EFDS. The Facilities and Services Division of I&L, designated DC I&L(LF), is the Marine Corps' Executive Agent for Installations. As such, DC I&L(LF) broadly oversees installation and facilities planning, programming, management, and investment. With regard to ranges and training areas, DC I&L (LF) provides policy, planning, systematic guidance, and central direction for real estate matters, environmental compliance, natural and cultural resources, compatible land use and community planning, and encroachment control throughout the Marine Corps. DC I&L (LF) conducts long-range facilities and infrastructure master planning and, as the Executive Agent, is the lead for MILCON.

The Marine Corps actively pursues initiatives and programs aimed at achieving compatible land use of public and private property near its installations and ranges. These programs depend upon partnerships with local community and governmental agencies to prevent incompatible land use near installations and training ranges. Marine Corps Community Plans and Liaison Offices (CPLO) lead these efforts, while I&L (LF) provides guidance and support to CPLOs and oversees programs and coordinates with federal agencies at a national level.

Marine Corps bases and stations are the "fifth element" of the MAGTF because of their close link to operating forces. Installations, especially range assets and capabilities, must be continuously available to support operations and training requirements. This is critical during the current platform, weapon, technology, and doctrine transition.

Training, operations, and installations compete for scarce resources. Installations and ranges, historically, are bill payers for other requirements. *Installations 2020* identifies the need to reverse this by investing in installations so that infrastructure development keeps pace with mission requirements and modernization. Managed by TECOM, the Range Investment Strategy is key to realizing that vision. The Range Investment Strategy adheres to DoD guidance, as reflected in the June 26, 2003, Memorandum from the Undersecretary of Defense for Personnel and Readiness to the Service Secretaries regarding "Guidance for Fiscal Years 2006-2011 Sustainable Range Programs," and has three main pillars: Sustainment, Upgrading, and Modernization/Transformation.

Range sustainment initiatives are required to stem range capability erosion to ensure "today's training today" is accomplished. Example range sustainment projects include improvements of existing training devices, targets, and control equipment not accomplished within existing O&M budgets. The Range Investment Strategy for FY-06 through FY-11 advocates Range Management System implementation and funding for the Ground Range Sustainment Program (GSRP), RCMPs, Range Control and Safety Initiatives, and Range Maintenance Programs.

RTAM and Marine Corps Systems Command established the GRSP, effective FY-03. GRSP fills a gap in the range funding process by identify, prioritizing, and funding ground range sustainment requirements.

Historically, the Navy-administered Systems Replacement and Modernization Program (SRAM) provided funding to aviation training ranges projects. Marine Corps ground ranges have lacked an analogous program. The GRSP complements SRAM by meeting range requirements indirectly linked to aviation training and identifies, prioritizes, and funds potential projects and completes costing and engineering efforts. The GRSP's main priority is to sustain existing capabilities by supporting unexpected requirements that would not be funded expeditiously via the Program Objective Memorandum (POM) budget cycle. GRSP project material and installation costs are typically below \$200,000 and include systems capability expansion, existing component upgrades, enhancing operational/maintenance efficiency, sustaining ground range and training area capabilities, and providing personnel safety and ground range system security.

Range upgrade investments aim to enhance ranges' capabilities to support current and future training requirements. This will be accomplished by state-of-the-art range technology investments (e.g. threat emitters, shoot-back devices, and the remote engagement target system (RETS)). Range upgrade programs (FY06-FY11) advocated in the Range Investment Strategy are mainly home-station instrumented ranges, focusing on RETS, Portable Infantry Target System (PITS), and Location of Miss and Hit (LOMAH).

Range transformation supports emerging and JNTC training requirements and seeks to afford tomorrow's training tomorrow. Training requirements driving transformation will be developed in the context of Expeditionary Maneuver Warfare and related operational concepts and weapon systems. The Expeditionary Force Development System (EFDS) will identify and implement EMW capabilities driving range modernization. Facilities and ranges must be planned, constructed, and acquired to afford future training abilities. Modernization investments include instrumentation supporting MAGTF and Joint exercises, development of MEB-level combined arms training areas and a MAGTF MOUT training facility, and optimization of littoral training capabilities.

The on-going SRAM program provides the Navy's Tactical Training Ranges with minor instrumentation and support equipment closely linked to aviation. The SRAM program maintains the current quality of tactical training support provided by range instrumentation during infrastructure downsizing and new range instrumentation system development. The SRAM program replaces low-cost tactical training instrumentation, and provides minor equipment to maintain current Fleet training capabilities.

5.4. Air Force

The Air Force has an integrated operational and engineering approach to range management. Air Force Instruction (AFI) 13-212 *Range Planning And Operations* (7 August 2001) is the primary document governing Air Force planning as it relates to ranges. AFI 13-212 consists of three volumes, each addressing a different aspect to range management: (1) Range Planning and Operations, (2) Range Construction and Maintenance, and (3) SAFE-RANGE Program Methodology.

AFI 13-212 requires that all major actions to establish, change use, modify, or close test or training space (including ranges or permanent airspace) are subject to review at the installation, MAJCOM, and Headquarters, Department of the Air Force levels. The entity that seeks to make the change (i.e., the "proponent") is required to describe the concept or action and alternatives to that action in a brief document designed to facilitate from the outset the airspace and range review process. This must be completed prior to start of the formal aeronautical and environmental evaluations. The process requires the development of a *Description of Proposed Actions and Alternatives* (DOPAA). This document provides the framework for assessing the environmental impact of a proposal, describing the purpose and

need for the action, the alternatives, and the rationale used to arrive at the proposed action. The DOPAA includes a *Background/Purpose* statement, a section detailing the *Need*, a *Proposed Action* section, and a section listing the *Alternatives*. The remaining three sections reiterate the *Decision to be Made*, provide the *Identification of the Decision Maker*, and outline any *Anticipated Issues* to provide an accurate portrayal of the proposed action and alternatives.

A Comprehensive Range Plan provides guidance on short and long-term needs. For new ranges, this must occur before the range is operational. A Comprehensive Range Plan will address:

- Land
- Airspace
- Range facilities
- Targets
- Instrumentation (including scoring devices)
- Range operations
- Safety
- Environmental factors
- Geography
- Local community and government use of adjacent land (regional development agreements)
- Legal liability
- Rehabilitation
- Range clearance/ decontamination
- Target lists
- Authorized ordnance
- Weapon safety footprint analysis
- Future plans or other actions that may have an impact on the range

5.4.1. Investment Strategy to Resolve Existing Constraints

The Combat Air Forces Mission Support Plan (CAF-MSP) defines the Air Force investment strategy for resolving existing training constraints related to ranges and airspace. The plan presents an investment strategy focused on 10 major areas:

- Land
- Airspace
- Environmental
- Unexploded Ordnance and Range Residue Removal
- Physical Plant (Real Property and Infrastructure)
- Scoring and Feedback Systems
- Communications Systems
- Integrated Air Defense Systems Training
- Targets and Target Arrays
- Management

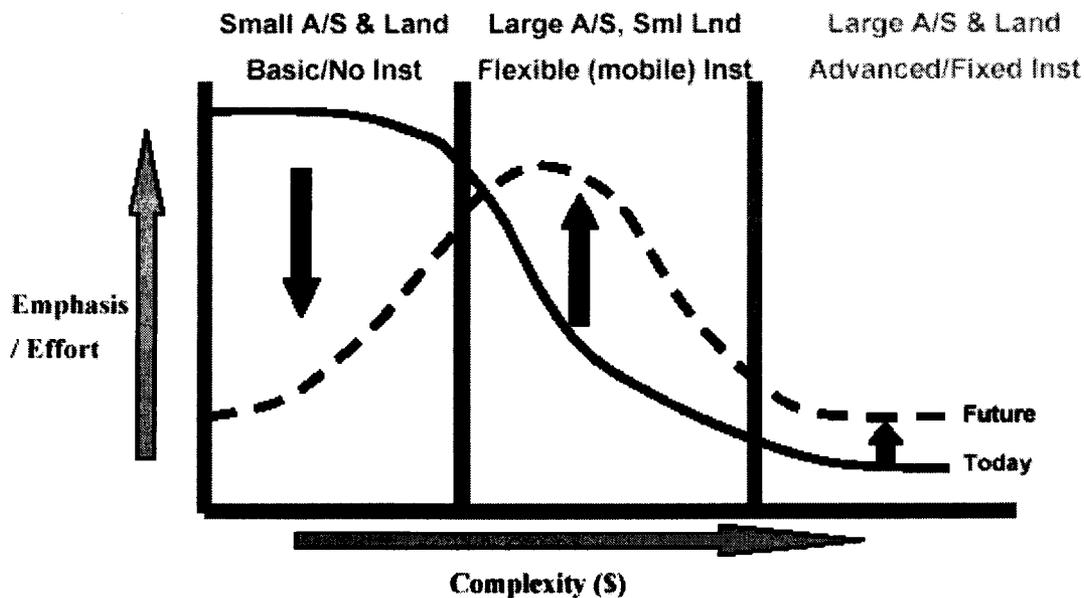
One of the objectives of the evaluation of the ranges conducted to create the CAF/MSP was to determine and document existing constraints (i.e., “deficiencies” in the lexicon of the *CAF-MSP*) and proposed investment areas. The majority of investment areas will see marked improvement in the ability to support realistic training. US Air Forces Europe (USAFE) as the theater air component and the major U.S. user of airspace in Europe has taken the first step in developing and implementing a comprehensive plan to address aircrew training requirements in Europe. USAFE is preparing an overall strategy to co-exist and

engage in the future European airspace environment. The goals and objectives presented in the draft *Airspace Strategy in Europe* were designed to improve USAFE posture in gaining access to the airspace it needs for its varied missions. Additional information on the plans to ensure the long-term viability of U.S. training on overseas ranges will be presented in subsequent reports.

5.4.2. Plans for the Future of Air Force Ranges

The evolution of air, space, and information warfare and the growing list of new military missions, applications, and systems drive the need for flexible and adaptive training methods. Standardization and seamless interoperability are imperative for the future of Air Force training. The Air Force supports the USD (P&R) *Strategic Plan for Transformation of DoD Training* and the Joint National Training Center's (JNTC) vision to create "A global network of joint training enablers; comprised of live, virtual, and constructive components that will provide a seamless joint training environment across a broad spectrum of joint training requirements."

Accomplishing the full spectrum of training and exercises requires moving from the current "stovepipe training systems, and their architectures" to a "system of training systems" with an open architecture. This change will promote interoperability with Joint and Coalition forces, and demands the development of technology to "... immerse the warfighter in realistic operational environments." A few of the key enabling technologies are summarized below.



The Next Range Instrumentation (NexRI) program is an Air Combat Command-lead effort to develop a standards based business mode, that will provide open, non-proprietary solutions to bring about interoperability of Live-Virtual-Constructive (L-V-C) training systems without needing to acquire new range instrumentation systems or develop new range instrumentation technology. NexRI has gained solid support from the OSD led JNTC office and from NATO with participation from the F/A-22 and JSF program offices. NexRI will develop a set of standards that provides a robust live instrumented combat training capability using a set of open standards including Standing NATO Agreement (STANAG) to allow acquisition and integration of interoperable range instrumentation (RI) from multiple sources. NexRI is not an acquisition program for new range instrumentation systems nor is it an R&D program for new range instrumentation technology.

Another future direction for training is embedded threat training. Embedded threat training is defined as the utilization of a weapon platform's inherent capabilities to conduct readiness training while the platform is being employed in a simulated environment for which it is designed. Air Combat Command, in conjunction with the Air Education and Training Command and other agencies, is to begin a detailed analysis of alternatives to tetherless IADS training capabilities. The Synthetic Theater of War (STOW) is an ongoing effort to integrate live, constructive, and virtual elements into a seamless environment. This will expand training opportunities from the operational level to the tactical level and from the sensor to the shooter. The live elements will focus on integrating C2, intelligence, and live participants; the virtual elements will seek to achieve a distributed network of man-in-the-loop simulations to provide realistic tactical training; and the constructive elements will seamlessly enhance legacy simulations with high level STOW entities for JFACC battle staff training. Air Force STOW goals will focus on Air Force and DARPA efforts to enhance air and space representations throughout all Air Force roles and missions.

5.4.3. Legislative or Regulatory Proposals to Resolve Constraints

The Air Force supports the ongoing efforts under the RRPI. The Air Force will present any legislative or regulatory proposals as necessary. The Air Force may seek to continue the sole National Security exemption, granted by President Bush on September 16, 2003, Presidential Determination No. 2003-39, for the Air Force's operating location near Groom Lake, Nevada. Should the existing constraints be proven impossible to resolve, the Air Force may be forced to seek such an exemption, or request for amendment of such statutes and regulations as are necessary to ensure that aircrew training continues to support readiness and our Nation's security.

5.5. Planned Action Funding Requirements

Funding to support sustainable ranges comes from many sources:

- Military construction funds pay for the construction and major alterations of range facilities. Construction funds pay for essential projects such as new training facilities, buildings to house simulators, and firing ranges.
- Procurement funds pay for range instrumentation, support equipment, targets, and training ordnance. These items are essential for realistic training. They create simulated threat environments, enable live fire training experiences, and provide accurate information and objective feedback on training performance.
- Research and development funds pay for the development of electronic, telecommunications, and instrumentation systems for training. They also pay for the development of threat emitters and systems, simulation systems, and environmentally preferable training systems and practices.
- Operation and maintenance (O&M) funds pay for base operations support and facilities sustainment, restoration, and modernization at training ranges. O&M funds also pay for many environmental programs that directly contribute to range sustainability.

The Department's spending on all issues directly or indirectly related to range sustainment is included in numerous program elements throughout the defense budget, making it difficult to develop a unique accounting for these efforts. DoD will continue to work to improve the visibility of financial information related to its sustainable range initiatives.

5.6. Designation of a Responsible Range Office Within Each Military Department

In accordance with Section 366's requirements, Table 5-2 identifies an office within the Office of the Secretary of Defense and in each of the military departments that will have lead responsibility for overseeing implementation of the comprehensive plan.

Organization	Office with Designated Responsibility
Office of the Secretary of Defense	Office of the Deputy Under Secretary of Defense for Readiness
Army	Office of the Deputy Chief of Staff, G-3 Training Directorate Training Simulations Division (DAMO-TRS)
Navy	Office of the Deputy Chief of Naval Operations Fleet Readiness and Logistics (N4) Fleet Readiness Division Navy Ranges and Fleet Training Branch
Marine Corps	Commanding General, Training and Education Command Range and Training Area Management Division ^a Deputy Commandant, Installations and Logistics Facilities and Services Division ^b
Air Force	Deputy Chief of Staff, Air and Space Operations Office of the Director of Operations and Training Ranges and Airspace Division

Table 5-2: Offices with Designated Responsibility for the Range Sustainment Comprehensive Plan

- a. Executive Agent for Ranges.
- b. Executive Agent for Installations.

6. OBSERVATIONS

The transformation of our military forces is driving many changes in the Department of Defense. As we implement these changes, however, some of our basic tenets remain constant. To provide ready military forces to meet our country's national security needs, our personnel must train as they would fight. This is especially true for combined arms and joint training. To train as we would fight requires reliable access to adequate land, air, sea space, and frequency spectrum resources. Today, encroachment effectively reduces the amount of these resources that the Department has to support essential military training.

And while predicting the future can be an uncertain business, all indicators point in the same direction: tomorrow's encroachment problems will be substantially worse than today's without effective management and broad cooperation. As our weapon systems grow in capability, they detect at greater distances, travel faster, cover wider areas, and process more information. These trends suggest training needs for more land area, airspace, sea space, and frequency spectrum. At the same time encroachment diminishes the availability of these resources.

The Department plans to continue to work with the Congress, other federal agencies, the states, Native American tribes, local governments, host nations abroad, and non-governmental organizations to address today's encroachment problems and preventing them from getting worse. The Department is grateful for the support that the Congress has provided thus far on the Readiness and Range Preservation Initiative, and we look forward to continuing to work with the Congress on the remaining RRPI items.

**Appendix A: Section 366 of the National Defense
Authorization Act for Fiscal Year 2003**

Section 366 of the National Defense Authorization Act for Fiscal Year 2003

SEC. 366. TRAINING RANGE SUSTAINMENT PLAN, GLOBAL STATUS OF RESOURCES AND TRAINING SYSTEM, AND TRAINING RANGE INVENTORY.

(a) **PLAN REQUIRED.**—(1) The Secretary of Defense shall develop a comprehensive plan for using existing authorities available to the Secretary of Defense and the Secretaries of the military departments to address training constraints caused by limitations on the use of military lands, marine areas, and airspace that are available in the United States and overseas for training of the Armed Forces.

(2) As part of the preparation of the plan, the Secretary of Defense shall conduct the following:

(A) An assessment of current and future training range requirements of the Armed Forces.

(B) An evaluation of the adequacy of current Department of Defense resources (including virtual and constructive training assets as well as military lands, marine areas, and airspace available in the United States and overseas) to meet those current and future training range requirements.

(3) The plan shall include the following:

(A) Proposals to enhance training range capabilities and address any shortfalls in current Department of Defense resources identified pursuant to the assessment and evaluation conducted under paragraph (2).

(B) Goals and milestones for tracking planned actions and measuring progress.

(C) Projected funding requirements for implementing planned actions.

(D) Designation of an office in the Office of the Secretary of Defense and in each of the military departments that will have lead responsibility for overseeing implementation of the plan.

(4) At the same time as the President submits to Congress the budget for fiscal year 2004, the Secretary of Defense shall submit to Congress a report describing the progress made in implementing this subsection, including—

(A) the plan developed under paragraph (1);

(B) the results of the assessment and evaluation conducted under paragraph (2); and

(C) any recommendations that the Secretary may have for legislative or regulatory changes to address training constraints identified pursuant to this section.

(5) At the same time as the President submits to Congress the budget for each of fiscal years 2005 through 2008, the Secretary shall submit to Congress a report describing the progress made in implementing the plan and any additional actions taken, or to be taken, to address training constraints caused by limitations on the use of military lands, marine areas, and airspace.

(b) **READINESS REPORTING IMPROVEMENT.**—Not later than June 30, 2003, the Secretary of Defense, using existing measures within the authority of the Secretary, shall submit to Congress a report on the plans of the Department of Defense to improve the Global Status of Resources and Training System to reflect the readiness impact that training constraints caused by limitations on the use of military lands, marine areas, and airspace have on specific units of the Armed Forces.

(c) **TRAINING RANGE INVENTORY.**—(1) The Secretary of Defense shall develop and maintain a training range inventory for each of the Armed Forces—

(A) to identify all available operational training ranges;

(B) to identify all training capacities and capabilities available at each training range; and

(C) to identify training constraints caused by limitations on the use of military lands, marine areas, and airspace at each training range.

(2) The Secretary of Defense shall submit an initial inventory to Congress at the same time as the President submits the budget for fiscal year 2004 and shall submit an updated inventory to Congress at the same time as the President submits the budget for fiscal years 2005 through 2008.

(d) **GAO EVALUATION.**—The Secretary of Defense shall transmit copies of each report required by subsections (a) and (b) to the Comptroller General. Within 60 days after receiving a report, the Comptroller General shall submit to Congress an evaluation of the report.

(e) **ARMED FORCES DEFINED.**—In this section, the term “Armed Forces” means the Army, Navy, Air Force, and Marine Corps.

**Appendix B: Section 320 of the National Defense
Authorization Act for Fiscal Year 2004**

Section 320 of the National Defense Authorization Act for Fiscal Year 2004

SEC. 320. REPORT REGARDING IMPACT OF CIVILIAN COMMUNITY ENCROACHMENT AND CERTAIN LEGAL REQUIREMENTS ON MILITARY INSTALLATIONS AND RANGES AND PLAN TO ADDRESS ENCROACHMENT.

(a) **STUDY REQUIRED.**—The Secretary of Defense shall conduct a study on the impact, if any, of the following types of encroachment issues affecting military installations and operational ranges:

(1) Civilian community encroachment on those military installations and ranges whose operational training activities, research, development, test, and evaluation activities, or other operational, test and evaluation, maintenance, storage, disposal, or other support functions require, or in the future reasonably may require, safety or operational buffer areas. The requirement for such a buffer area may be due to a variety of factors, including air operations, ordnance operations and storage, or other activities that generate or might generate noise, electromagnetic interference, ordnance arcs, or environmental impacts that require or may require safety or operational buffer areas.

(2) Compliance by the Department of Defense with State Implementation Plans for Air Quality under section 110 of the Clean Air Act (42 U.S.C. 7410).

(3) Compliance by the Department of Defense with the Solid Waste Disposal Act (42 U.S.C. 6901 et seq.) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq.).

(b) **MATTERS TO BE INCLUDED WITH RESPECT TO CIVILIAN COMMUNITY ENCROACHMENTS.**—With respect to paragraph (1) of subsection (a), the study shall include the following:

11. 11. 1955—10

(1) A list of all military installations described in subsection (a)(1) at which civilian community encroachment is occurring.

(2) A description and analysis of the types and degree of such civilian community encroachment at each military installation included on the list.

(3) An analysis, including views and estimates of the Secretary of Defense, of the current and potential future impact of such civilian community encroachment on operational training activities, research, development, test, and evaluation activities, and other significant operational, test and evaluation, maintenance, storage, disposal, or other support functions performed by military installations included on the list. The analysis shall include the following:

(A) A review of training and test ranges at military installations, including laboratories and technical centers of the military departments, included on the list.

(B) A description and explanation of the trends of such encroachment, as well as consideration of potential future readiness problems resulting from unabated encroachment.

(4) An estimate of the costs associated with current and anticipated partnerships between the Department of Defense and non-Federal entities to create buffer zones to preclude further development around military installations included on the list, and the costs associated with the conveyance of surplus property around such military installations for purposes of creating buffer zones.

(5) Options and recommendations for possible legislative or budgetary changes necessary to mitigate current and anticipated future civilian community encroachment problems.

(c) **MATTERS TO BE INCLUDED WITH RESPECT TO COMPLIANCE WITH SPECIFIED LAWS.**—With respect to paragraphs (2) and (3) of subsection (a), the study shall include the following:

(1) A list of all military installations and other locations at which the Armed Forces are encountering problems related to compliance with the laws specified in such paragraphs.

(2) A description and analysis of the types and degree of compliance problems encountered.

(3) An analysis, including views and estimates of the Secretary of Defense, of the current and potential future impact of such compliance problems on the following functions performed at military installations:

(A) Operational training activities.

(B) Research, development, test, and evaluation activities.

(C) Other significant operational, test and evaluation, maintenance, storage, disposal, or other support functions.

(4) A description and explanation of the trends of such compliance problems, as well as consideration of potential future readiness problems resulting from such compliance problems.

(d) **PLAN TO RESPOND TO ENCROACHMENT ISSUES.**—On the basis of the study conducted under subsection (a), including the specific matters required to be addressed by subsections (b) and (c), the Secretary of Defense shall prepare a plan to respond to the encroachment issues described in subsection (a) affecting military installations and operational ranges.

(e) REPORTING REQUIREMENTS.—The Secretary of Defense shall submit to the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives the following reports regarding the study conducted under subsection (a), including the specific matters required to be addressed by subsections (b) and (c):

(1) Not later than January 31, 2004, an interim report describing the progress made in conducting the study and containing the information collected under the study as of that date.

(2) Not later than January 31, 2006, a report containing the results of the study and the encroachment response plan required by subsection (d).

(3) Not later than January 31, 2007, and each January 31 thereafter through January 31, 2010, a report describing the progress made in implementing the encroachment response plan.

**Appendix C: Department of Defense Directive 3200.15,
“Sustainment of Ranges and Operating Areas (OPAREAS)”**



Department of Defense
DIRECTIVE

NUMBER 3200.15

January 10, 2003

USD(P&R)

SUBJECT: Sustainment of Ranges and Operating Areas (OPAREAs)

- References:
- (a) Title 10, United States Code
 - (b) DoD Directive 5124.2, "Under Secretary of Defense for Personnel and Readiness (USD(P&R))," October 31, 1994
 - (c) DoD Directive 1322.18, "Military Training," January 9, 1987
 - (d) DoD Directive 5149.2, "Senior Readiness Oversight Council (SROC)," July 23, 2002
 - (e) through (al), see enclosure 1

1. PURPOSE

This Directive establishes policy and assigns responsibilities under reference (a) for the sustainment of test and training ranges and OPAREAs in the Department of Defense.

2. APPLICABILITY AND SCOPE

This Directive applies to:

2.1. The Office of the Secretary of Defense (OSD), the Military Departments, the Chairman of the Joint Chiefs of Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities in the Department of Defense (hereafter referred to collectively as "the DoD Components").

2.2. All ranges and OPAREAs that are used by the DoD Components.

2.3. For ranges and OPAREAs outside the United States, subject to the terms of all international agreements, land use agreements, and treaties.

3. DEFINITIONS

Terms used in this Directive are defined in enclosure 2.

4. POLICY

It is DoD policy that:

4.1. Ranges and OPAREAs shall be managed and operated to support their long-term viability and utility to meet the National defense mission. All functional elements of installation, range, and OPAREA management shall be integrated fully to support the DoD testing and training missions.

4.2. Planning and management for the DoD range and OPAREA-sustainment program shall:

4.2.1. Identify current and future operational air, ground, sea and/or undersea, space, and frequency spectrum range and OPAREA requirements necessary to meet test and training needs.

4.2.2. Identify range and OPAREA encroachment concerns, environmental considerations, financial obligations, and safety factors that may influence current or future range and OPAREA activities, including reasonably anticipated future uses if the range has a finite withdrawal or lease period that shall not be renewed. When developing a new range, ensure that plans consider all aspects of a range's lifecycle including development, use and closure.

4.2.3. Evaluate current and future mission requirements in light of concerns identified in subparagraph 4.2.2., above, and develop and implement responsive range management plans that shall:

4.2.3.1. Incorporate all other relevant planning documents or portions thereof.

4.2.3.2. Address requirements and issues identified in subparagraphs 4.2.1. and 4.2.2., above, using a functionally integrated decisionmaking process that includes installation, range, and OPAREA managers, users, and environmental, legal, public affairs, safety, medical, and other support staffs.

4.2.3.3. Promote inter- and intra-Service coordination of sustainment-management issues.

4.2.4. Develop and utilize sound Geographic Information System (GIS)-based range inventory and scientific data, as the basis for decisionmaking.

4.2.5. Implement the range and OPAREA sustainment program through planning, programming, and budgeting for necessary facilities, personnel, research, development, and support services.

4.3. In accordance with the sustainment program and range-management plans under paragraph 4.2., above, such programs and plans shall:

4.3.1. Institute multi-tiered (e.g., national, regional, and local) coordination and outreach programs that promote sustainment of ranges and OPAREAs and resolution of encroachment issues that promote understanding of the readiness, safety, environmental, and economic considerations surrounding the use and management of ranges and OPAREAs.

4.3.2. Ensures consideration of stakeholder interests in DoD range-related decisions.

4.3.3. Improve communications and enter into cooperative agreements and partnerships with other Federal Agencies, and State, tribal, and local, governments, and with nongovernmental organizations with expertise or interest in DoD ranges, OPAREAs, and airspace to further sustainment objectives.

5. RESPONSIBILITIES

5.1. The Under Secretary of Defense for Personnel and Readiness, shall:

5.1.1. In coordination with the Director, Operational Test and Evaluation (DOT&E), and the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), and through the Defense Test and Training Steering Group (DTTSG), and consistent with paragraph 4.2., above:

5.1.1.1. Prepare guidance for developing range and OPAREA sustainment programs within the DoD Components.

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5.1.1.2. Ensure that inventories of training ranges and OPAREAs are completed, updated every 5 years, and maintained in a GIS readily accessible by installation and range decisionmakers.

5.1.2. Provide oversight of operational ranges used for training and shall ensure that DoD-level programs are in place to protect the future ability of the DoD Components to conduct force training, as required.

5.1.3. Establish means to assess the readiness benefits of range and OPAREA sustainment initiatives, and monitor the readiness impact of external encroachment on operational ranges used for training.

5.1.4. In coordination with DOT&E, begin and lead a national-level outreach effort to inform stakeholders of the DoD requirement for ranges and OPAREAs and their importance to readiness, and coordinate DoD sustainable range and OPAREA policy.

5.1.5. Review personnel and readiness policy-affiliated DoD Directives 5124.2, 1322.18, 5149.2, 7730.65, 3030.1, 4700.4, 4165.61, and 5000.1 (references (b) through (i)), implementing DoD Instructions 5000.2, 3030.2, and 4715.10 (references (j), (m), and (n)), and supporting issuances for consistency; revise them; and eliminate duplicative requirements.

5.2. The Under Secretary of Defense for Acquisition, Technology, and Logistics, shall:

5.2.1. Provide policy and guidance to ensure that sustainment issues are considered in development and acquisition programs, including the capability to test and train within ground, sea, air, and frequency spectrum space, as envisioned in the operational requirements documents (ORDs).

5.2.2. Review USD(AT&L) policy-affiliated DoD Directives 3030.1, 4700.4, 4165.61, 5000.1, 5134.1, 3200.11, 4001.1, 4165.6, 4270.5, 4710.1, 4715.1, 4715.11, 4715.12, 5030.41, 6055.9, and 6230.1 (references (f) through (i), (o) through (y), and (z)), implementing DoD Instructions 5000.2, 4165.14, 4165.57, 4170.10, 4715.2, 4715.3, 4715.4, 4715.6, 4715.7, 4725.9, and 5000.64 (references (j) and (aa) through (aj)), and supporting references for consistency; revise them; and eliminate repetitive requirements.

5.2.3. Have overall OSD-oversight responsibility for safety, explosives safety, environmental, and technology policies for the implementation of this Directive.

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5.2.4. Ensure that there is a research, development, test, and evaluation (RDT&E) program(s) to address knowledge and technology requirements necessary for range and OPAREA sustainment.

5.3. The Under Secretary of Defense for Policy, shall coordinate implementation of range and OPAREA sustainment policies with foreign governments that are hosting DoD ranges.

5.4. The Assistant Secretary of Defense for Public Affairs, shall support the outreach efforts in subparagraphs 5.1.4., above.

5.5. The Assistant Secretary of Defense for Legislative Affairs, shall support the outreach efforts in subparagraph 5.1.4., above.

5.6. The Heads of the DoD Components, shall:

5.6.1. Issue or revise policy and guidance that shall implement the requirements in paragraphs 4.1. through 4.3., above.

5.6.2. Plan, program, and budget for resources necessary to support sustainable test and training initiatives at all operational ranges and OPAREAs.

5.6.3. Following the issuance of guidance under subparagraph 5.1.1.1., above, prepare management plans for ranges and OPAREAs, as defined by each DoD Component.

5.6.4. Implement standards and assess readiness impacts and the sustainability of ranges and OPAREAs, according to established DoD guidance.

5.6.5. Assign responsibility for range and OPAREA sustainment management at the DoD Component Headquarters level and at the organizational levels in the DoD Component.

5.6.6. Conduct outreach programs consistent with efforts established in subparagraph 5.2.4., above.

5.6.7. For operational ranges where the Department of Defense is legally obligated to conduct environmental remediation, report on associated liabilities. DoD 7000.14-R (reference (1)) provides guidance on remediation liabilities.

5.7. The Chairman of the Joint Chiefs of Staff shall direct consideration of range and OPAREA sustainment issues in the requirements generation process, and shall review all acquisition category level 1 and Joint Requirements Oversight Council special interest item mission needs statements and ORDs for consistency with sustainment objectives.

5.8. The Director, Operational Test and Evaluation, shall:

5.8.1. As the Chair of the DTTSG, monitor and report regularly on the progress of the range and OPAREA sustainment initiative to the Senior Readiness Oversight Council.

5.8.2. Provide oversight of operational ranges used for testing and shall ensure that DoD-level programs are in place to protect the future ability to conduct testing, as required.

5.8.3. Establish means to assess the readiness benefits of range and OPAREA sustainment initiatives, and shall monitor the readiness impact of external encroachment on operational ranges used for testing.

5.8.4. In coordination with the Deputy Under Secretary of Defense for Readiness, begin and lead a national-level outreach effort to promote test and training needs, and coordinate DoD sustainable-range and OPAREA policy.

5.8.5. Review DOT&E policy-affiliated DoD Directives 5000.1, 3200.11, and 5141.2 (references (i), (p), and (ak)), implementing DoD Instruction 5000.2 (reference (j)), and supporting references for consistency; revise them; and eliminate repetitive requirements.

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6. EFFECTIVE DATE

This Directive is effective immediately.


Paul Wolfowitz
Deputy Secretary of Defense

Enclosures - 2
E1. References, continued
E2. Definitions

E1. ENCLOSURE 1REFERENCES, continued

- (e) DoD Directive 7730.65, "Department of Defense Readiness Reporting System (DRRS)," June 3, 2002
- (f) DoD Directive 3030.1, "Office of Economic Adjustment (OEA)," November 28, 2000
- (g) DoD Directive 4700.4, "Natural Resources Management Program," January 24, 1989
- (h) DoD Directive 4165.61, "Intergovernmental Coordination of DoD Federal Development Programs and Activities," August 9, 1983
- (i) DoD Directive 5000.1, "The Defense Acquisition System," October 23, 2000
- (j) DoD Instruction 5000.2, "Operation of the Defense Acquisition System," April 5, 2002
- (k) DoD 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," April 5, 2002
- (l) DoD 7000.14-R, "DoD Financial Management Regulations (FMRs)," Volume 4, "Accounting Policy and Procedures," January 11, 1995
- (m) DoD Instruction 3030.2, "Community Planning and Impact Assistance," May 24, 1983
- (n) DoD Instruction 4715.10, "Environmental Education, Training and Career Development," April 24, 1996
- (o) DoD Directive 5134.1, "Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L))," May 21, 2000
- (p) DoD Directive 3200.11, "Major Range and Test Facility Base (MRTFB)," May 1, 2002
- (q) DoD Directive 4001.1, "Installation Management," September 4, 1986
- (r) DoD Directive 4165.6, "Real Property Acquisition, Management, and Disposal," September 1, 1987
- (s) DoD Directive 4270.5, "Military Construction Responsibilities," March 2, 1982
- (t) DoD Directive 4710.1, "Archaeological and Historic Resources Management," June 21, 1984
- (u) DoD Directive 4715.1, "Environmental Security," February 24, 1996
- (v) DoD Directive 4715.11, "Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Within the United States," August 17, 1999

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- (w) DoD Directive 4715.12, "Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Outside the United States," August 17, 1999
- (x) DoD Directive 5030.41, "Oil and Hazardous Substances Pollution Prevention and Contingency Program," June 1, 1977
- (y) DoD Directive 6055.9, "DoD Explosives Safety Board (DDESB) and DoD Component Explosives Safety Responsibilities," July 29, 1996
- (z) DoD Directive 6230.1, "Safe Drinking Water," May 24, 1978
- (aa) DoD Instruction 4165.14, "Inventory of Military Real Property," August 25, 1977
- (ab) DoD Instruction 4165.57, "Air Installations Compatible Use Zones," November 8, 1977
- (ac) DoD Instruction 4170.10, "Energy Management Policy," August 8, 1991
- (ad) DoD Instruction 4715.2, "DoD Regional Environmental Coordination," May 3, 1996
- (ae) DoD Instruction 4715.3, "Environmental Conservation Program," May 3, 1996
- (af) DoD Instruction 4715.4, "Pollution Prevention," May 18, 1996
- (ag) DoD Instruction 4715.6, "Environmental Compliance," April 24, 1996
- (ah) DoD Instruction 4715.7, "Environmental Restoration Program," April 22, 1996
- (ai) DoD Instruction 4715.9, "Environmental Planning and Analysis," May 3, 1996
- (aj) DoD Instruction 5000.64, "Defense Property Accountability," August 13, 2002
- (ak) DoD Directive 5141.2, "Director of Operational Test and Evaluation (DOT&E)," May 25, 2000
- (al) Title 40, Code of Federal Regulations, Part 266, Subpart M, "Military Munitions," August 12, 1977

E2. ENCLOSURE 2

DEFINITIONS

E2.1. DEFINED TERMS

E2.1.1. Operational Range. A military range that is used for range activities; is not currently being used, but is still considered by the DoD Component to be a range area, is under the jurisdiction, custody, or control of the Department of Defense; or has not been put to a new use that is incompatible with range activities. Also includes OPAREAs, and active and inactive ranges that are defined by 40 CFR 266 (reference (a)).

E2.1.2. Range and Operating Area (OPAREA). Specifically bounded geographic areas that may encompass a landmass, body of water (above or below the surface), and/or airspace used to conduct operations, training, research and development, and test and evaluation of military hardware, personnel, tactics, munitions, explosives, or electronic combat systems. Those areas shall be under strict control of the Armed Forces or may be shared by multiple Agencies.

E2.1.3. Range Encroachment. External influences threatening or constraining range and OPAREA activities required for force readiness and weapons RDT&E. It includes, but is not limited to, endangered species and critical habitat, unexploded ordnance and munitions, electronic frequency spectrum, maritime, airspace restrictions, air quality, airborne noise, and urban growth.

E2.1.4. Sustainable Ranges. Ranges that are managed and operated to support their long-term viability and utility to meet the National defense mission.

E2.1.5. United States. The States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Marianas Islands, the U.S. Virgin Islands, Guam, American Samoa, Johnston Atoll, Kingman Reef, Midway Island, Nassau Island, Palmyra Island, Wake Island, and any other territory or possession of the United States, and associated navigable waters, contiguous zones, and ocean waters of which the natural resources are under the exclusive management authority of the United States.

Appendix D: Air Force Training Range Characteristics

Table 2-6
Training Range Characteristics

Features	Primary Training Ranges	Combat Training Centers and Combat Readiness Training Centers ^{1, 2, 3}	Major Range and Test Facility Bases ^{1, 2, 3}
Land Space	<ul style="list-style-type: none"> Range size to support basic training events but often limits the delivery of weapons. 	<ul style="list-style-type: none"> Area determined by sensor range Terrain representative of threat areas 	<ul style="list-style-type: none"> Large enough for tactical maneuvers in coordinated, multi-platform, multi-warfare area operations
Air Space	<ul style="list-style-type: none"> Primarily support weapon employment by single platform or formation, although many can support formation plus FAC-A, helos and/ or heavy drops 	<ul style="list-style-type: none"> Tactical maneuvering for multi-unit coordinated exercise. Multi-Service, many unit, coordinated mock combat operations 	<ul style="list-style-type: none"> Large enough for tactical maneuvers in coordinated, multi-platform, multi-warfare area operations
Targets & Target Arrays	<ul style="list-style-type: none"> Basic targets to support weapon targeting and delivery of practice or live weapons for proficiency training^(Note 1) Real and simulated targets Multiple target arrays in realistic environment Visual fidelity Sensor significant Expendable ground targets for practice Limited live ordnance 	<ul style="list-style-type: none"> Real and simulated targets Multiple target arrays in realistic environment Visual fidelity for real targets Expendable ground targets for practice and live ordnance Surface, subsurface, airborne live-fire targets 	<ul style="list-style-type: none"> Real and/or simulated targets Variety of full-scale, threat-representative targets in realistic environment Visual fidelity for real targets Sensor significant
IADS	<ul style="list-style-type: none"> Signal recognition Minimal number (2-3) Basic emitters suited to weapon and sensor employed 	<ul style="list-style-type: none"> Coordinated multiple threats Accurate threat replication for sensor and countermeasures employment and targeting 	<ul style="list-style-type: none"> High density, variety (real and/or simulated) of threats located throughout exercise area Coordinated IADS operations.
Scoring & Feedback	<ul style="list-style-type: none"> Weapon impact scoring in target area Data collection to evaluate weapon delivery Immediate post-op debrief 	<ul style="list-style-type: none"> Participant tracking Weapon impact scoring Simulated weapon employment outcome Correlated sensor data collection to assess multi-platform coordination Immediate real-time feedback and post-op debrief 	<ul style="list-style-type: none"> Participant tracking Correlated sensor data collection to assess coordinated engagements Weapon scoring, both simulated and real deliveries Kill removal Immediate real-time and post-exercise debrief Integration of Test and Training instrumentation systems.

Note 1. Threat environment not required during weapon delivery training.

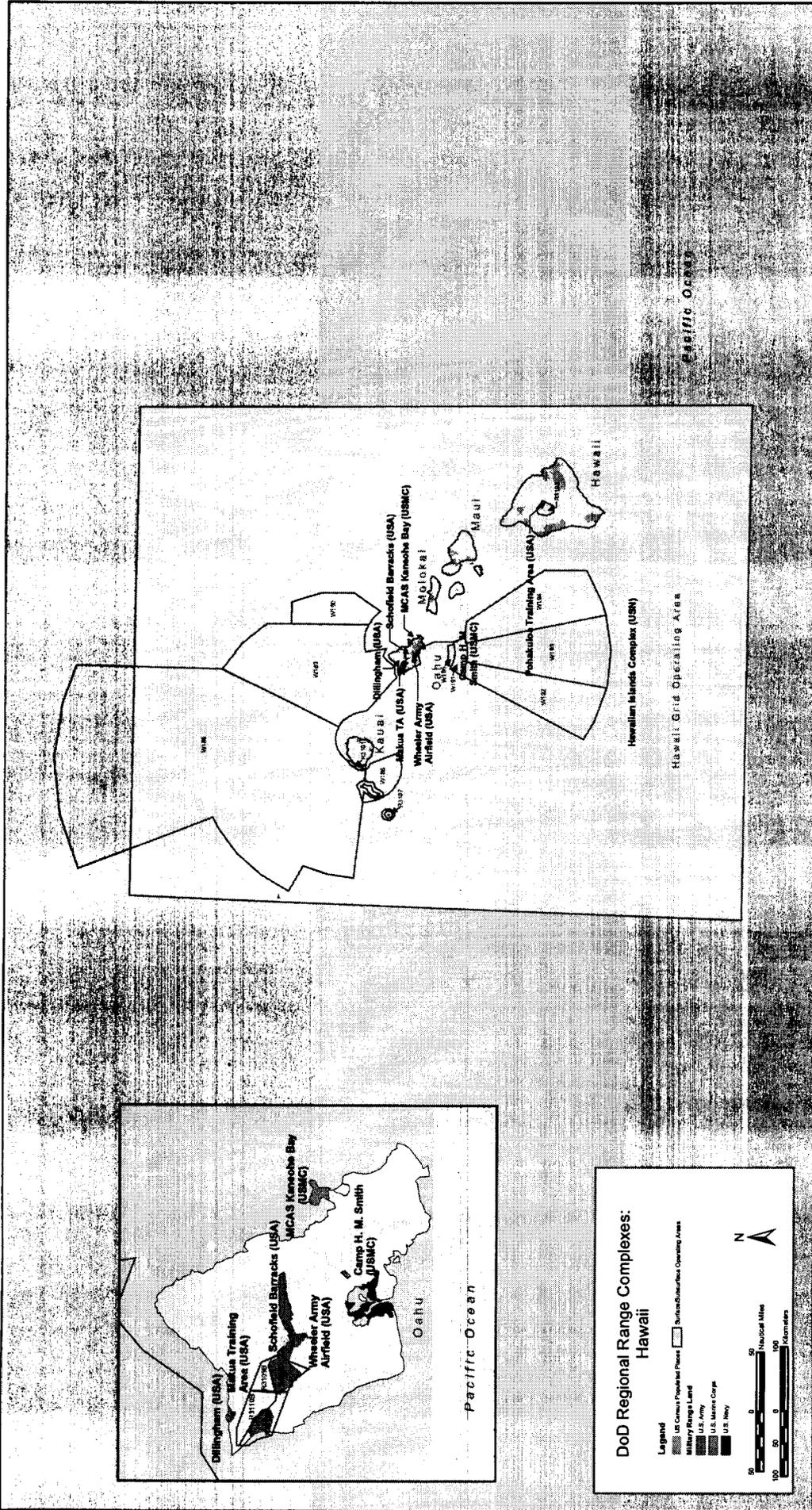
Note 2. In addition to PTR characteristics.

Note 3. In addition to PTR and CTC/CTRC characteristics.

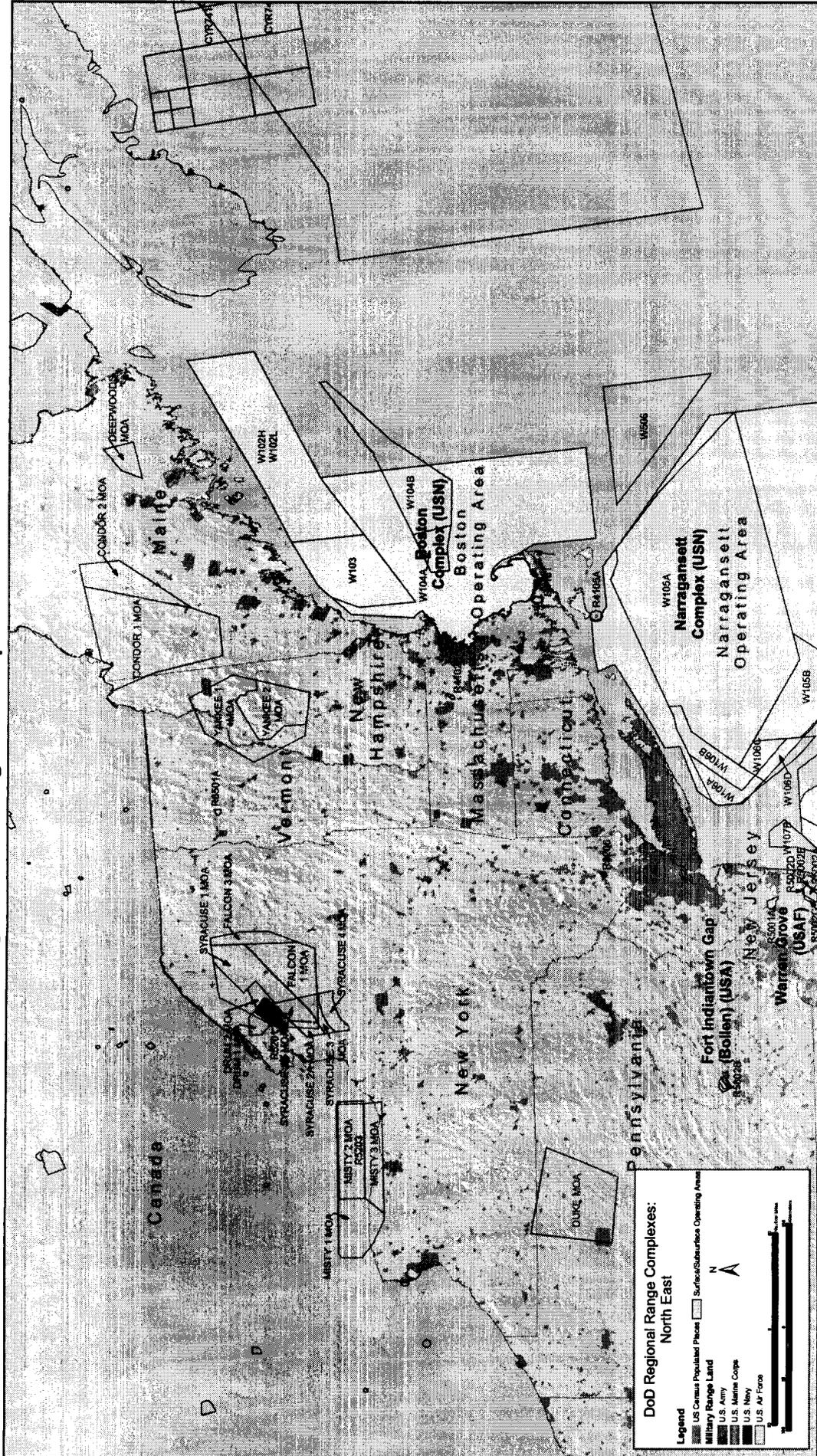
Source: Combat Air Forces Mission Support Plan FY2005, pages 7-8

**Appendix E: Maps and Inventory of Department of Defense
Range Complexes, Individual Ranges not in a Complex, and
Special Use Airspace**

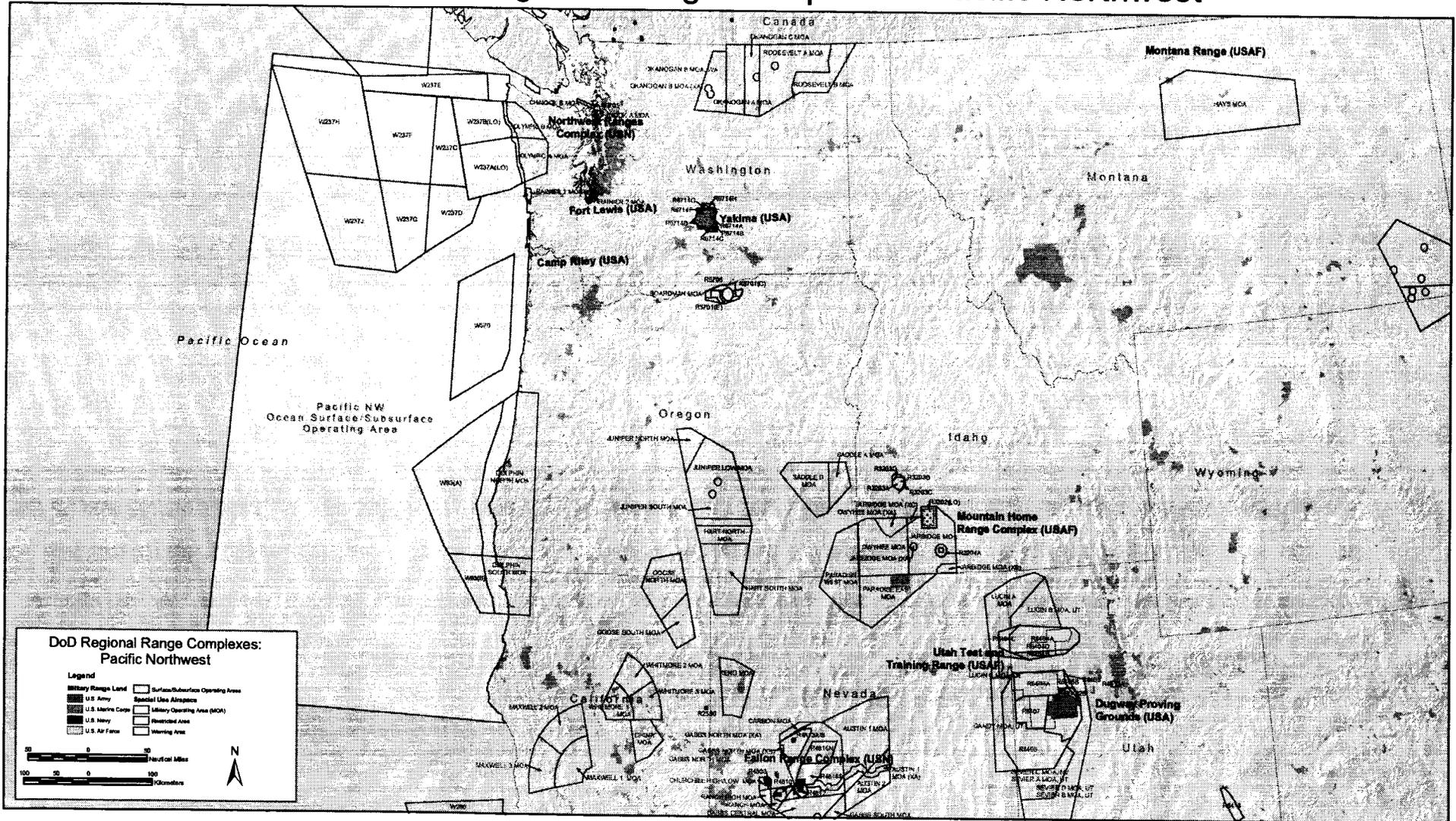
DoD Regional Range Complexes: Hawaii



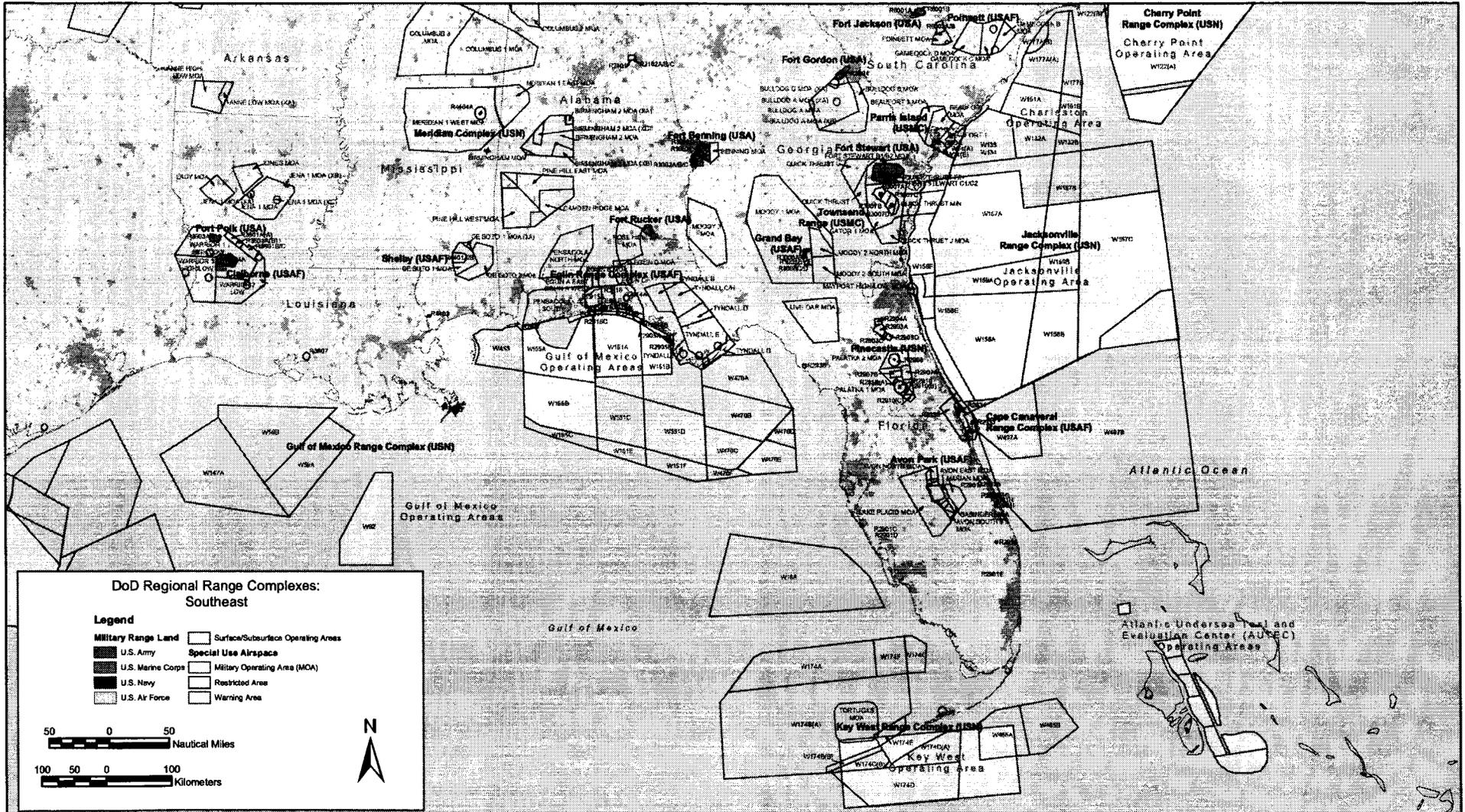
DoD Regional Range Complexes: North East



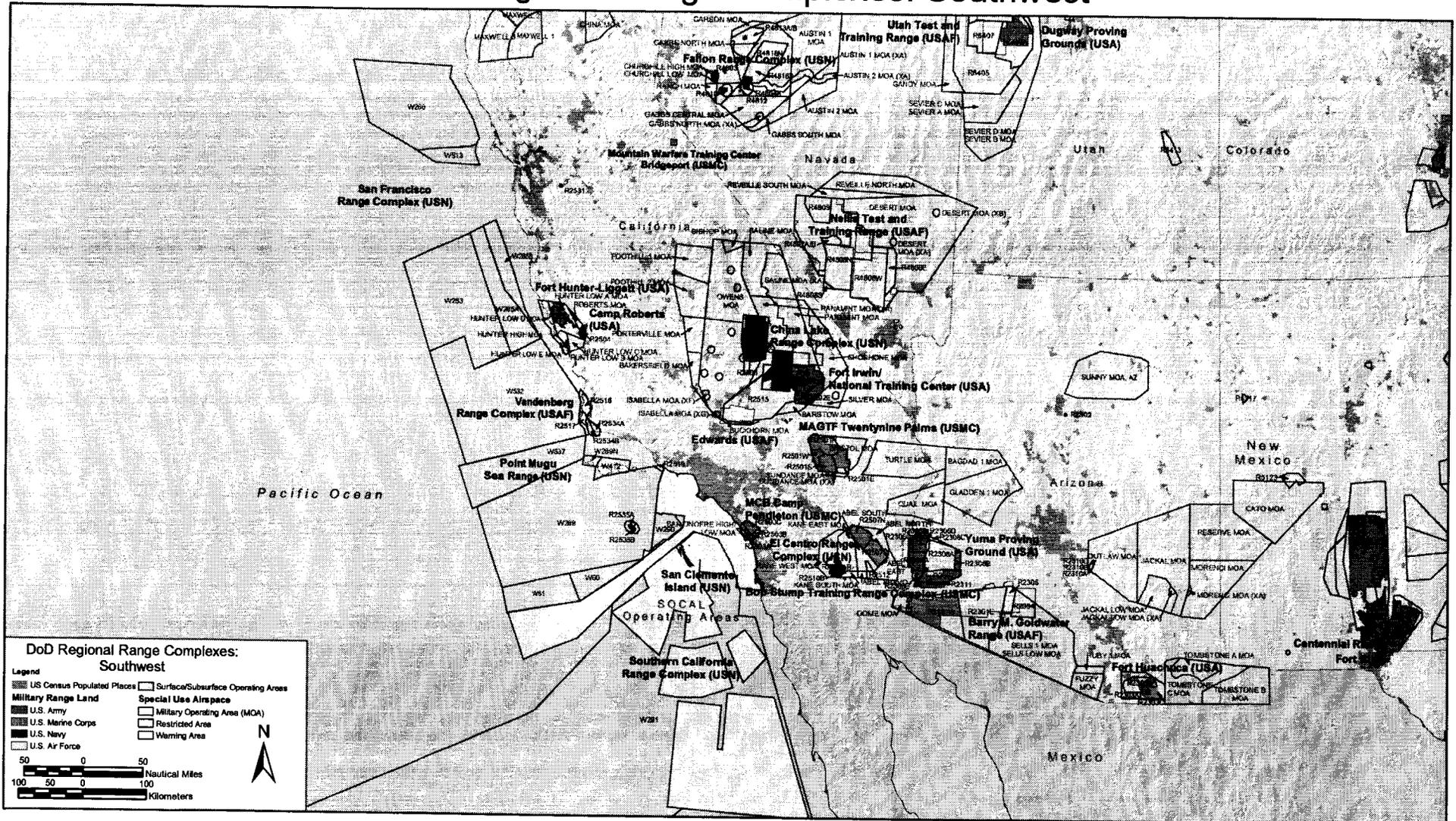
DoD Regional Range Complexes: Pacific Northwest



DoD Regional Range Complexes: Southeast



DoD Regional Range Complexes: Southwest



TRAINING AND TESTING RANGE COMPLEX INVENTORY

Military Service	Range Complex	United States (US) or Overseas (OS)	State or Country	Major Command or Claimant Organization	Range Description *				Range Type												
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Training Area (sq nm)	Air-to-Air or Surface-to-Air	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2/IEW	Queen Operating Area	MOBT	Underwater Training Range	Amphibious Area	Other		
ARMY	Fort Richardson	US	AK	USARPAC	54,541	183	0	0		Y	Y	Y									Y
	Fort Wainwright	US	AK	USARPAC	922,566	0	0	0			Y	Y									Y
	Fort Benning	US	GA	TRADOC	168,778	422	0	0		Y	Y	Y									Y
	Fort Bliss	US	TX	TRADOC	1,096,153	1597	0	0		Y	Y	Y									Y
	Fort Bragg	US	NC	FORSKOM	143,569	1718	0	0		Y	Y	Y									Y
	Fort Carson/Pinon Canyon	US	CO	FORSKOM	364,311	1153	0	0		Y	Y	Y									Y
	Fort Drum	US	NY	FORSKOM	98,524	299	0	0		Y	Y	Y									Y
	Dillingham MIL RES	US	HI	USARPAC	800	0	0	0		Y											Y
	Kahuka Training Area	US	HI	USARPAC	8,833	0	0	0		Y											Y
	Kewaloa Training Area	US	HI	USARPAC	23,459	0	0	0		Y											Y
	Makua MIL RES	US	HI	USARPAC	4,228	0	0	0			Y	Y									Y
	Pohakuloa Training Area	US	HI	USARPAC	109,950	0	0	0		Y	Y	Y									Y
	Schofield Barracks MIL RES	US	HI	USARPAC	11,442	0	0	0		Y	Y	Y									Y
	Fort Hood	US	TX	FORSKOM	199,759	500	0	0		Y	Y	Y									Y
	Fort Irwin	US	CA	FORSKOM	597,508	580	0	0		Y	Y	Y									Y
	Fort Knox	US	KY	TRADOC	101,823	113	0	0		Y	Y	Y									Y
	Orchard (Gowen Field) Training Area	US	ID	ARNG	138,847	0	0	0		Y	Y	Y									Y
	Fort Pickett	US	VA	ARNG	38,999	161	0	0		Y	Y	Y									Y
	Fort Polk	US	LA	FORSKOM	138,737	5471	0	0		Y	Y	Y									Y
	Camp Ripley	US	MN	ARNG	50,929	0	0	0		Y	Y	Y									Y
	Camp Shelby	US	MS	ARNG	133,794	0	0	0		Y	Y	Y									Y
	Fort Sill	US	OK	TRADOC	85,002	153	0	0		Y	Y	Y									Y
	Fort Stewart	US	G	FORSKOM	274,137	556	0	0		Y	Y	Y									Y
	White Sands Missile Range	US	NM	ATEC	3,548,156	7321	0	0			Y	Y									Y
	Yakima Training Center	US	WA	FORSKOM	324,313	0	0	0		Y	Y	Y									Y
	Yuma Proving Ground	US	AZ	ATEC	1,033,361	1500	0	0		Y		Y									Y
	Aberdeen Proving Ground	US	MD	AMC	84,250	133	0	0		Y		Y									Y
	Fort A.P. Hill	US	VA	MDW	74,263	928	0	0		Y	Y	Y									Y
	Camp Atterbury	US	IN	ARNG	31,889	0	0	0		Y	Y	Y									Y
	Camp Blanding	US	FL	ARNG	66,856	0	0	0		Y	Y	Y									Y
	Fort Campbell	US	KY/TN	FORSKOM	93,348	931	0	0		Y	Y	Y									Y
	Fort Dix	US	NJ	USARC	28,002	104	0	0		Y	Y	Y									Y
	Dugway Proving Ground	US	UT	ATEC	783,063	0	0	0		Y	Y	Y									Y
	Camp Grayling	US	MI	ARNG	147,711	8680	0	0		Y	Y	Y									Y
	Camp Gruber	US	OK	ARNG	48,887	0	0	0		Y		Y									Y
	Fort Indiantown Gap	US	PA	ARNG	14,940	0	0	0		Y	Y	Y									Y
	Fort Jackson	US	SC	TRADOC	29,832	0	0	0		Y	Y	Y									Y
	Fort Leonard Wood	US	MO	TRADOC	53,502	175	0	0		Y	Y	Y									Y
	Fort Lewis	US	WA	FORSKOM	77,877	0	0	0		Y	Y	Y									Y
	Fort McClellan	US	AL	ARNG	41	0	0	0		Y		Y									Y
	Fort McCoy	US	WI	USARC	135,801	0	0	0		Y	Y	Y									Y
	Camp San Luis Obispo	US	CA	ARNG	4,862	0	0	0		Y	Y	Y									Y
	Fort Riley	US	KS	FORSKOM	92,660	107	0	0		Y	Y	Y									Y
	Camp Roberts	US	CA	ARNG	41,051	84	0	0		Y	Y	Y									Y
	Fort Rucker	US	AL	TRADOC	58,189	0	0	0		Y	Y	Y									Y
	Camp Beauregard	US	LA	ARNG	12,588	0	0	0		Y	Y	Y									Y
	Bog Brook/Riley Deepwoods Training Site	US	ME	ARNG	341,015	0	0	0		Y		Y									Y
	Camp Bowie Brownwood	US	TX	ARNG	8,997	0	0	0		Y		Y									Y
	Blak Training Center	US	OR	ARNG	27,961	0	0	0		Y		Y									Y
	Camp Crowder	US	MO	ARNG	4,098	0	0	0		Y	Y	Y									Y
	Fort Custer Training Center	US	MI	ARNG	7,487	0	0	0		Y	Y	Y									Y
	Camp Dawson	US	WV	ARNG	4,383	0	0	0		Y	Y	Y									Y
	Ethan Allen Firing Range	US	VT	ARNG	10,742	0	0	0		Y		Y									Y
	Camp Edwards	US	MA	ARNG	13,285	13	0	0		Y	Y	Y									Y
	Eustis/Fort Story	US	VA	TRADOC	3,999	0	0	0		Y	Y	Y									Y
	Fort Gordon	US	GA	TRADOC	49,353	0	0	0		Y	Y	Y									Y

Military Service	Range Complex	United States (US) or Overseas (OS)	State or Country	Major Command or Claimant Organization	Range Description *				Range Type												
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Training Area (sq nm)	Air-to-Air or Surface-to-Air	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2/IEW	Coastal Operating Area	MDUT	Underwater Training Range	Amphibious Area	Other		
	Camp Grafton	US	ND	TRADOC	11,300	0	0	0		Y		Y									Y
	Camp Guernsey	US	WY	ARNG	35,062	46	0	0		Y	Y	Y									Y
	Hunter-Liggit	US	CA	USARC	154,473	113	0	0		Y		Y									Y
	Keaukaha MIL RES	US	HI	ARNG	434	0	0	0		Y		Y									Y
	Fort Lee	US	VA	TRADOC	2,949	89	0	0		Y	Y	Y									Y
	Limestone Hills Training Area	US	MT	ARNG	19,120	0	0	0		Y		Y									Y
	Camp McCain	US	MB	ARNG	12,796	0	0	0		Y		Y									Y
	McCrary Training Center	US	SC	ARNG	14,506	0	0	0		Y		Y									Y
	Camp Minden	US	LA	ARNG	13,667	0	0	0		Y		Y									Y
	Navajo	US	AZ	ARNG	28,442	0	0	0					Y								Y
	Paris RFTA	US	CA	USARC	1,963	0	0	0		Y	Y	Y									Y
	Redstone Arsenal	US	AL	AMC	27,656	25	0	0		Y		Y									Y
	Camp Perry	US	OH	ARNG	343	0	0	0		Y	Y	Y									Y
	Camp Rilea	US	OR	ARNG	4,213	0	0	0		Y		Y									Y
	Camp Robinson	US	AR	ARNG	30,637	0	0	0		Y	Y	Y					Y				Y
	Fort Sam Houston/Camp Bullis	US	TX	MEDCOM	27,656	0	0	0		Y	Y	Y									Y
	Camp Santiago	US	PR	ARNG	12,044	0	0	0		Y	Y	Y									Y
	Wendell H. Ford Regional Training Center	US	KY	ARNG	7,174	0	0	0		Y	Y	Y									Y
	West Point MIL RES	US	NY	USMA	14,101	4	0	0		Y	Y	Y									Y
	Camp Williams	US	UT	ARNG	25,000	0	0	0		Y	Y	Y					Y				Y
	Stewart River	US	AK	ARNG	25,519	0	0	0		Y		Y									Y
	Camp Butler	US	NC	ARNG	4,500	0	0	0		Y	Y	Y									Y
	TS Caswell	US	ME	ARNG	1,094	0	0	0		Y		Y									Y
	Catoosa	US	TH	ARNG	1,515	0	0	0		Y	Y	Y									Y
	Camp Clark	US	MO	ARNG	997	0	0	0		Y	Y	Y									Y
	Fort Devens	US	MA	USARC	4,586	0	0	0		Y	Y	Y									Y
	MTA Camp Dodge	US	IA	ARNG	4,025	0	0	0		Y	Y	Y					Y				Y
	Florence Training Site	US	AZ	ARNG	25,559	61	0	0				Y	Y								Y
	Fort William Henry Harrison	US	MT	ARNG	6,314	0	0	0		Y		Y					Y				Y
	Camp Ashland - Greenleaf Training Site	US	NE	ARNG	4,263	0	0	0		Y		Y									Y
	Macon Training Site	US	MT	ARNG	3,062	0	0	0		Y		Y									Y
	Marseilles Training Site	US	IL	ARNG	2,630	0	0	0		Y	Y	Y									Y
	Camp Maxey	US	TX	ARNG	6,562	0	0	0		Y	Y	Y									Y
	McAlester AAP	US	OK	AMC	2,245	0	0	0		Y		Y									Y
	Milan Volunteer Training Site	US	TH	ARNG	2,391	0	0	0		Y		Y									Y
	Rowell	US	NM	ARNG	5,376	0	0	0		Y		Y									Y
	Smith	US	NY	ARNG	1,763	0	0	0		Y	Y	Y									Y
	Kansas Regional Training Site (Smokay Hills)	US	KS	ARNG	3,404	0	0	0		Y	Y	Y									Y
	Stones Ranch MIL RES	US	CT	ARNG	5,753	0	0	0		Y		Y									Y
	Tulahoma MIL RES	US	TH	ARNG	6,553	0	0	0		Y		Y									Y
	Camp Villere	US	LA	ARNG	656	0	0	0		Y		Y									Y
	Wappapellots	US	MO	ARNG	2,187	0	0	0		Y		Y									Y
	Camp Wisner	US	WB	ARNG	3,319	0	0	0		Y		Y									Y
	Anniston Army Depot	US	AL	AMC	88	0	0	0					Y								Y
	Arden Hills Army Training Site	US	MN	ARNG	1,796	0	0	0		Y											Y
	Auburn	US	ME	ARNG	203	0	0	0		Y		Y									Y
	Austin Training Property	US	NE/SD	ARNG	413	0	0	0		Y		Y									Y
	Bangor Training Center	US	ME	ARNG	189	0	0	0		Y		Y									Y
	Barker Dam Training Site	US	TX	ARNG	572	0	0	0		Y		Y									Y
	Belton LTA	US	MO	USARC	461	0	0	0		Y											Y
	Black Mountain	US	NM	ARNG	2,114	0	0	0		Y		Y									Y
	Blossom Point Research Facility	US	MD	AMC	1,643	0	0	0		Y		Y									Y
	Blue Grass Army Depot	US	KY	AMC	175	0	0	0		Y		Y									Y
	Buckman	US	FL	ARNG	66	0	0	0													Y
	Bucksnort Gun Club	US	MO	ARNG	10	0	0	0					Y								Y
	Buhl Training Site	US	ID	ARNG	162	0	0	0		Y		Y									Y
	Camp Adair	US	OR	ARNG	526	0	0	0		Y		Y									Y
	Camp Curtis Guild	US	MA	ARNG	623	0	0	0		Y		Y									Y
	Camp Davis	US	ND	ARNG	62	0	0	0		Y		Y									Y

Military Service	Range Complex	United States (US) or Overseas (OB)	State or Country	Major Command or Claimant Organization	Range Description *				Range Type										
					Land Area for Ranges (hectares)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Training Area (sq nm)	Above-Air or Surface-to-Air	Above-Ground	Land Maneuver	Land Impact Area	Land Firing Range	CG/NAVY	Ocean Operating Area	IS/ST	Underwater Training Range	Amphibious Area	Other
	Camp Fogarty Training Site	US	RI	ARNG	17,795	0	0	0		Y	Y	Y							Y
	Camp Fretterd	US	MD	ARNG	424	0	0	0		Y									Y
	Camp Hartell	US	CT	ARNG	31	0	0	0		Y		Y							Y
	Camp Johnson	US	VT	ARNG	505	0	0	0		Y			Y						Y
	Camp Mackall	US	NC	FORSCOM	8,484	0	0	0		Y									Y
	Camp Merrill	US	GA	TRADOC	344,990	0	0	0		Y		Y							Y
	Camp Murray	US	WA	ARNG	113	0	0	0											Y
	Camp Rowland	US	CT	ARNG	38	0	0	0											Y
	Camp Sherman	US	NC	ARNG	430	0	0	0		Y	Y	Y							Y
	Camp Stanley Storage Activity	US	TX	AMC	82	0	0	0						Y					Y
	Camp Swift	US	TX	ARNG	11,663	0	0	0		Y		Y							Y
	Camp Varnum	US	RI	ARNG	18	0	0	0		Y									Y
	Camp Withycombe	US	OR	ARNG	186	0	0	0		Y									Y
	Casper Armory	US	WY	ARNG	27	0	0	0		Y		Y							Y
	Chaffee	US	AR	ARNG	63,519	51	0	0		Y	Y	Y							Y
	Clinton Training Site	US	PA	USARC	154	0	0	0		Y			Y						Y
	Colorado Springs Training Site	US	CO	ARNG	310	1	0	0					Y						Y
	Cpt. Euripides Rubio Jr. Center	US	PR	USARC	51	0	0	0											Y
	De Bremond Training Center	US	NM	ARNG	1,343	0	0	0		Y		Y							Y
	Defense Distribution Depot Susquehanna	US	PA	AMC	0	0	0	0				Y	Y						Y
	Deseret Chemical Depot	US	UT	AMC	552	0	0	0				Y							Y
	Dona Ana Range Camp	US	NM	ARNG	64	0	0	0		Y									Y
	Duffield Industrial Park	US	VA	ARNG	75	0	0	0											Y
	East Haven Rifle Range	US	CT	ARNG	113	0	0	0		Y	Y								Y
	Eastern Kentucky Gun Club	US	KY	ARNG	13	0	0	0		Y			Y						Y
	Floyd Edsal Training Center	US	NV	ARNG	1,525	0	0	0		Y		Y							Y
	Fort Allen	US	PR	ARNG	423	0	0	0		Y									Y
	Fort Belvoir	US	VA	MDW	2,178	0	0	0		Y	Y								Y
	Fort George G. Meade	US	MD	MDW	129	0	0	0		Y									Y
	Fort Gillem	US	GA	FORSCOM	474	0	0	0		Y									Y
	Fort Huachuca	US	AZ	TRADOC	73,953	815	0	0		Y	Y	Y							Y
	Fort Leavenworth	US	KS	TRADOC	4,285	0	0	0		Y		Y							Y
	Fort Meade	US	SD	ARNG	6,136	0	0	0		Y									Y
	Fort Monmouth	US	NJ	AMC	104	0	0	0		Y		Y				Y			Y
	Fort Nathaniel Greene	US	RI	USARC	86	0	0	0		Y		Y							Y
	Fort Wingate Missile Launch Complex	US	NM	ATEC	6,526	0	0	0					Y						Y
	Fort Wolters	US	TX	ARNG	4,061	0	0	0		Y	Y	Y							Y
	Frye Mountain Training Site	US	ME	ARNG	5,137	0	0	0		Y		Y							Y
	Fort McPherson	US	GA	FORSCOM	21	0	0	0		Y		Y							Y
	Gardiner	US	ME	ARNG	106	0	0	0		Y		Y							Y
	Greely	US	AK	USARPAC	631,843	0	0	0		Y	Y	Y				Y			Y
	Green River Launch Complex	US	UT	ATEC	3,980	0	0	0				Y							Y
	Guiderland	US	NY	ARNG	291	0	0	0				Y							Y
	Gunpowder MIL RES	US	MD	ARNG	227	0	0	0		Y									Y
	Happy Valley (Carlsbad)	US	NM	ARNG	721	0	0	0		Y			Y						Y
	Hawthorne Army Depot	US	NV	AMC	35,786	0	0	0				Y	Y						Y
	Henry H. Cobb Jr. - Pelham	US	AL	ARNG	22,142	0	0	0		Y	Y	Y							Y
	Hollis Plains Training Site	US	ME	ARNG	412	0	0	0		Y		Y							Y
	Hunter Army Airfield	US	GA	FORSCOM	2,632	0	0	0		Y		Y							Y
	Idaho Falls Training Site	US	ID	ARNG	1,081	0	0	0		Y		Y							Y
	Idaho Launch Complex	US	ID	ATEC	315	0	0	0					Y						Y
	Ike Skelton Training Site	US	MO	ARNG	24	0	0	0		Y		Y							Y
	Indiana Range Wet Site	US	PA	ARNG	185	0	0	0		Y		Y							Y
	Iowa AAP	US	IA	AMC	1,338	0	0	0		Y		Y							Y
	Jefferson Proving Ground	US	IN	AMC	1,050	0	0	0			Y								Y
	John Sevier Range	US	TN	ARNG	6	0	0	0					Y						Y
	Joliet Training Center	US	IL	USARC	3,446	0	0	0		Y	Y	Y							Y
	Kanaloa Training Center	US	HI	ARNG	4,633	0	0	0		Y		Y							Y
	Kansas AAP	US	KS	AMC	157	0	0	0		Y		Y							Y

Military Service	Range Complex	United States (US) or Overseas (OS)	State or Country	Major Command or Claimant Organization	Range Description *				Range Type										
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Surface-to-Air	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	CW/IEW	Ocean Operating Area	MOOT	Underwater Tracking Range	Amphibious Area	Other
	VACAPEB	US	VA/NC	CFFC	1,541	30,563	28,823	0	Y	Y	Y	Y	Y			Y		Y	
	Whidbey Island	US	WA/OR/CA	CFFC	47,982	43,870	126,630	0	Y		Y	Y	Y	Y	Y			Y	Y
	Test and Evaluation	Various	Various	NAVAIR/NAVSEA	1,161,900	31,860	1,850	195	Y	Y					Y		Y		
MARINE CORPS																			
	Camp Butler	OS	Japan	MARFORPAC	47,000	3,330	0	0			Y	Y	Y			Y		Y	
	Camp Lejeune	US	NC	MARFORLANT	152,006	200	11	0		Y	Y	Y	Y			Y	Y	Y	
	Camp Pendleton	US	CA	MARFORPAC	114,000	392	17	0		Y	Y	Y	Y			Y	Y	Y	
	Cherry Point	US	NC	COMCABEAST	29,139	20,712	0	0	Y	Y		Y	Y						
	MAGTFCT 29 Palms	US	CA	TECOM	594,083	1,267	0	0		Y	Y	Y	Y						
	MCAS Beaufort/Townsend	US	SC	COMCABEAST	5,200	1,206	0	0	Y	Y		Y	Y						
	MCAS Miramar	US	CA	COMCABWEST	4,682	0	0	0				Y	Y						
	Bob Stump Training Range Complex	US	AZ	COMCABWEST	1,218,000	10,000	0	0	Y	Y	Y	Y	Y	Y			Y		
	MCB Hawaii	US/OS	HI	MARFORPAC	1,857	0	0	0			Y	Y	Y			Y	Y	Y	
	MCB Quantico	US	VA	MCCDC	60,080	278	0	0		Y	Y	Y	Y			Y			
	MCLB Albany	US	GA	MATCOM	4	0	0	0				Y	Y						
	MCLB Barstow	US	CA	MATCOM	2,438	0	0	0				Y	Y						
	MCMWTC Bridgeport	US	CA	TECOM	45,217							Y							
	MCRD Parris Island	US	SC	TECOM	50	0	0	0			Y	Y	Y						
AIR FORCE																			
	Adirondack	US	NY	ANG	35,000	200	0	0		Y						Y			
	Airburst	US	CO	ANG	3,110	26	0	0		Y						Y			
	Aterbury	US	IN	ANG	33,000	103	0	0		Y						Y			
	Avon Park	US	FL	ACC	106,110	1,400	0	0	Y	Y									
	Barry M. Goldwater Range	US	AZ	AETC	1,100,000	3,908	0	0	Y	Y						Y			
	Belle Fourche ESS	US	SD	ACC	183	0	0	0		Y						Y			
	Blair Lake	US	AK	PACAF	2,560	22,000	0	0		Y									
	Bollen	US	PA	ANG	18,000	42	0	0		Y						Y			
	Cannon	US	MO	ANG	4,405	339	0	0		Y						Y			
	Claiborne	US	LA	AFRes	3,140	135	0	0		Y						Y			
	Dare County Ranges	US	SC	ACC	46,821	1,184	0	0	Y	Y						Y			
	Edwards Ranges	US	CA	AFMC	58,066	20,000	0	0	Y	Y						Y			
	Eglin Ranges	US	FL	AFMC	483,360	133,979	0	0	Y	Y						Y			
	Falcon	US	OK	AFRes	5,200	1,845	0	0		Y						Y			
	Grand Bay	US	GA	ACC	5,900	17,290	0	0		Y									
	Grayling	US	MI	ANG	8,000	83	0	0	Y	Y						Y			
	Hardwood	US	WI	ANG	7,929	84	0	0		Y	Y					Y			
	Holloman	US	NM	ACC	230,320	2,256	0	0	Y	Y						Y			
	Jefferson	US	IN	ANG	55,280	180	0	0	Y	Y						Y			
	Koon-Ni	OS	Korea	PACAF	0	0	0	0		Y						Y			
	Lone Star ESS	US	TX	ACC	90	0	0	0		Y						Y			
	McMullen	US	TX	ANG	1,200	63	0	0		Y						Y			
	Metrose	US	NM	ACC	66,033	22,000	0	0	Y	Y						Y			
	Mountain Home Ranges	US	ID	ACC	122,278	18,526	0	0	Y	Y						Y			
	Nevada Testing and Training Range	US	NV	ACC	2,900,000	12,000	0	0	Y	Y						Y			
	Oklahoma	US	AK	PACAF	25,600	22,000	0	0		Y						Y			
	Pisung	OS	Korea	PACAF	0	0	0	0		Y						Y			
	Poinsett	US	SC	ACC	12,506	1,500	0	0		Y						Y			
	Polygon	OS	France/Germany	USAFE	0	0	0	0		Y						Y			
	Razorback	US	AR	ANG	19,870	128	0	0		Y						Y			
	Ripsaw	OS	Japan	PACAF	0	0	0	0		Y						Y			
	Shelby Ranges	US	MS	ANG	26,676	0	0	0		Y						Y			
	Shoal Creek	US	TX	AFRes	17,540	5,200	0	0		Y						Y			
	Siegenberg	OS	Germany	USAFE	0	0	0	0		Y						Y			
	Smokey Hill	US	KS	ANG	33,875	53	0	0		Y						Y			
	Snyder ESS	US	TX	ACC	90	0	0	0		Y						Y			
	Torishima	OS	Japan	PACAF	0	0	0	0		Y						Y			
	Townsend	US	GA	ANG	5,183	288	0	0		Y						Y			
	Utah Testing and Training Ranges	US	UT	ACC	1,804,399	12,574	0	0	Y	Y						Y			
	Warren Grove	US	NJ	ANG	9,416	30	0	0		Y						Y			
	Yukon	US	AK	PACAF	25,600	22,000	0	0		Y						Y			

* Estimates are based on currently available information. Estimates may change as a result of ongoing reviews. Users from various units, installations, and Services share special use airspace (SUA). For this reason, a simple one-to-one linking of airspace to installations does not fully describe airspace usage. As a general rule, this inventory links SUA to the installation responsible for scheduling SUA use. A full discussion of the management of SUA is beyond the scope of this report. Readers should therefore interpret the SUA information in this inventory with appropriate caution. Subsequent Section 366 and 320 reports will include a fuller discussion of SUA.

Source: Department of Defense data provided by the Military Services.

Special Use Airspace

FAA Class	FAA Name	ICAO Name	FAA Class	ICAO Name	Country	Area (sq. mi.)	Total
R4001A	FAA, WASHINGTON, DC ARTCC	Aberdeen Proving Ground	USA		USA	105	
R4001B	FAA, WASHINGTON, DC ARTCC	Aberdeen Proving Ground	USA		USA	28	133
R2101	FAA, ATLANTA ARTCC	Annieston Army Depot	USA		USA	2	2
R3203B	FAA, SALT LAKE CITY ARTCC	Boise	USA		USA	90	
R3203C	FAA, SALT LAKE CITY ARTCC	Boise	USA		USA	9	
R3203A	FAA, SALT LAKE CITY ARTCC	Boise	USA		USA	90	
SADDLE A MOA, OR	FAA, SALT LAKE CITY ARTCC	Boise	USA		USA	514	
SADDLE B MOA, OR	FAA, SALT LAKE CITY ARTCC	Boise	USA		USA	1273	1976
R4101	FAA, CAPE APP	Camp Edwards	USA		USA	13	13
STEELHEAD MOA, MI	FAA, CLEVELAND ARTCC	Camp Grayling	USA		USA	2205	
PIKE WEST MOA, MI	FAA, MINNEAPOLIS ARTCC	Camp Grayling	USA		USA	2774	
PIKE EAST MOA, MI	FAA, MINNEAPOLIS ARTCC	Camp Grayling	USA		USA	3591	
R4201A	FAA, MINNEAPOLIS ARTCC	Camp Grayling	USA		USA	64	
R4202	FAA, MINNEAPOLIS ARTCC	Camp Grayling	USA		USA	5	
R4201B	FAA, MINNEAPOLIS ARTCC	Camp Grayling	USA		USA	41	8680
R7001B	FAA, DENVER ARTCC	Camp Guernsey	USA		USA	48	
R7001A	FAA, DENVER ARTCC	Camp Guernsey	USA		USA	48	48
R4301	FAA, MINNEAPOLIS ARTCC	Camp Riley	USA		USA	64	64
R2504	FAA, OAKLAND ARTCC	Camp Roberts	USA		USA	25	25
R2401B	FAA, MEMPHIS ARTCC	Chaffee	USA		USA	2	
R2401A	FAA, MEMPHIS ARTCC	Chaffee	USA		USA	18	
R2402	FAA, MEMPHIS ARTCC	Chaffee	USA		USA	63	81
R2602	FAA, DENVER ARTCC	Colorado Springs Training Site	USA		USA	1	
R4102A	FAA, BOSTON ARTCC	Devens Reserve Forces Training Area	USA		USA	6	
R4102B	FAA, BOSTON ARTCC	Devens Reserve Forces Training Area	USA		USA	6	6
R2310C	FAA, ALBUQUERQUE ARTCC	Florence Training Site	USA		USA	15	
R2310A	FAA, ALBUQUERQUE ARTCC	Florence Training Site	USA		USA	29	
R2310B	FAA, ALBUQUERQUE ARTCC	Florence Training Site	USA		USA	18	61
HILL MOA, VA	FAA, POTOMAC APP	Fort A.P. Hill	USA		USA	36	
R6601	FAA, RICHMOND TWR	Fort A.P. Hill	USA		USA	40	
HILL TOP MOA, IN	FAA, CHICAGO ARTCC	Fort A.P. Hill	USA		USA	850	926
R3002F	FAA, ATLANTA ARTCC	Fort Benning	USA		USA	119	
R3002D	FAA, ATCT, COLUMBUS	Fort Benning	USA		USA	79	
R3002E	FAA, ATCT, COLUMBUS	Fort Benning	USA		USA	79	
BENNING MOA, GA	FAA, COLUMBUS TWR	Fort Benning	USA		USA	107	
R3002A	FAA, ATCT, COLUMBUS	Fort Benning	USA		USA	117	
R3002B	FAA, ATCT, COLUMBUS	Fort Benning	USA		USA	117	
R3002C	FAA, ATCT, COLUMBUS	Fort Benning	USA		USA	117	422
R5103C	FAA, ALBUQUERQUE ARTCC	Fort Bliss	USA		USA	659	
R5103A	FAA, ALBUQUERQUE ARTCC	Fort Bliss	USA		USA	279	
R5103B	FAA, ALBUQUERQUE ARTCC	Fort Bliss	USA		USA	659	1597
R5311C	FAA, WASHINGTON, DC ARTCC	Fort Bragg	USA		USA	121	
FORT BRAGG SOUTH AREA A MOA, NC (XA)	FAA, FAYETTEVILLE TWR	Fort Bragg	USA		USA	11	
FORT BRAGG NORTH AREA B MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	USA		USA	30	
FORT BRAGG SOUTH AREA B MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	USA		USA	36	
FORT BRAGG NORTH AREA A MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	USA		USA	42	
FORT BRAGG SOUTH AREA A MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	USA		USA	53	
R5311A	FAA, WASHINGTON, DC ARTCC	Fort Bragg	USA		USA	123	
R5311B	FAA, WASHINGTON, DC ARTCC	Fort Bragg	USA		USA	123	540
R3702B	FAA, MEMPHIS ARTCC	Fort Campbell	USA		USA	93	
R3702A	FAA, MEMPHIS ARTCC	Fort Campbell	USA		USA	93	
CAMPBELL 2 MOA, KY	FAA, MEMPHIS ARTCC	Fort Campbell	USA		USA	311	
CAMPBELL 1 MOA, KY	FAA, MEMPHIS ARTCC	Fort Campbell	USA		USA	398	
R3701	USA, CAMPBELL AAF APP	Fort Campbell	USA		USA	8	
CAMPBELL 2 MOA, KY (XA)	FAA, MEMPHIS ARTCC	Fort Campbell	USA		USA	30	931
R2601B	FAA, DENVER ARTCC	Fort Carson	USA		USA	123	
R2601C	FAA, DENVER ARTCC	Fort Carson	USA		USA	123	
R2601D	FAA, DENVER ARTCC	Fort Carson	USA		USA	123	
R2601A	FAA, DENVER ARTCC	Fort Carson	USA		USA	123	
PINON CANYON MOA, CO	FAA, DENVER ARTCC	Fort Carson	USA		USA	1030	1153
R5002E	FAA, NEW YORK ARTCC	Fort Dix	USA		USA	2	
R5002D	FAA, NEW YORK ARTCC	Fort Dix	USA		USA	3	
R5002C	FAA, NEW YORK ARTCC	Fort Dix	USA		USA	9	
R5002B	FAA, NEW YORK ARTCC	Fort Dix	USA		USA	12	
R5001B	FAA, NEW YORK ARTCC	Fort Dix	USA		USA	21	
R5001A	FAA, NEW YORK ARTCC	Fort Dix	USA		USA	23	
R5002A	FAA, NEW YORK ARTCC	Fort Dix	USA		USA	36	104
R5201	FAA, BOSTON ARTCC	Fort Drum	USA		USA	110	
DRUM 2 MOA, NY	USA, WHEELER SACK APP	Fort Drum	USA		USA	94	
DRUM 1 MOA, NY	USA, WHEELER SACK APP	Fort Drum	USA		USA	95	299
R3004	FAA, ATLANTA ARTCC	Fort Gordon	USA		USA	31	31
R2202C	FAA, ANCHORAGE ARTCC	Fort Greely	USA		USA	563	
R2202A	FAA, ANCHORAGE ARTCC	Fort Greely	USA		USA	169	
R2202B	FAA, ANCHORAGE ARTCC	Fort Greely	USA		USA	362	1124
R6302D	FAA, HOUSTON ARTCC	Fort Hood	USA		USA	24	
R6302C	FAA, HOUSTON ARTCC	Fort Hood	USA		USA	40	
R6302A	FAA, HOUSTON ARTCC	Fort Hood	USA		USA	126	
R6302B	FAA, HOUSTON ARTCC	Fort Hood	USA		USA	15	

Special Use Airspace

Military Service	SUA Name	Controlling Agency	Route Category / Installation Name	Unit	Area (sq. mi.)	Total
	GRAY MOA, TX	FAA, HOUSTON ARTCC	Fort Hood	USA	28	
	HOOD MOA, TX	FAA, HOUSTON ARTCC	Fort Hood	USA	267	
	R8320	FAA, HOUSTON ARTCC	Fort Hood	USA		500
	R2303C	FAA, ALBUQUERQUE ARTCC	Fort Huachuca	USA	233	
	R2303B	FAA, ALBUQUERQUE ARTCC	Fort Huachuca	USA	316	
	R2303A	FAA, ALBUQUERQUE ARTCC	Fort Huachuca	USA	266	815
	R2513	FAA, OAKLAND ARTCC	Fort Hunter-Leggett	USA	113	113
	KIOVA MOA, PA	FAA, NEW YORK ARTCC	Fort Indiantown Gap	USA	20	
	R5802A	FAA, NEW YORK ARTCC	Fort Indiantown Gap	USA	12	
	R5802B	FAA, NEW YORK ARTCC	Fort Indiantown Gap	USA	14	45
	R2502N	FAA, HI-DESERT TRACON, EDWARDS AFB	Fort Irwin	USA	560	560
	R8001B	FAA, JACKSONVILLE ARTCC	Fort Jackson	USA	40	
	R8001A	FAA, JACKSONVILLE ARTCC	Fort Jackson	USA	38	78
	R3704B	FAA, STANDIFORD TWR, LOUISVILLE	Fort Knox	USA	113	
	R3704A	FAA, STANDIFORD TWR, LOUISVILLE	Fort Knox	USA	113	113
	R6602B	FAA, WASHINGTON, DC ARTCC	Fort Lee	USA	33	
	R6602C	FAA, WASHINGTON, DC ARTCC	Fort Lee	USA	33	
	R6602A	FAA, WASHINGTON, DC ARTCC	Fort Lee	USA	36	99
	R4501B(B)	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	USA	0	
	R4501F	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	USA	4	
	R4501B(A)	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	USA	10	
	RAINIER 3 MOA, WA	FAA, SEATTLE-TACOMA APP CON	Fort Leonard Wood	USA	14	
	R4501H	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	USA	15	
	R4501A	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	USA	21	
	RAINIER 1 MOA, WA	FAA, SEATTLE-TACOMA APP CON	Fort Leonard Wood	USA	27	
	R4501C	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	USA	34	
	R4501D	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	USA	34	
	R4501E	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	USA	34	
	RAINIER 2 MOA, WA	FAA, SEATTLE-TACOMA APP CON	Fort Leonard Wood	USA	49	175
	R8714D	FAA, SEATTLE ARTCC	Fort Lewis	USA	4	
	R8714F	FAA, SEATTLE ARTCC	Fort Lewis	USA	14	
	R8714G	FAA, SEATTLE ARTCC	Fort Lewis	USA	21	
	R8714B	FAA, SEATTLE ARTCC	Fort Lewis	USA	25	
	R8714C	FAA, SEATTLE ARTCC	Fort Lewis	USA	29	
	R8714A	FAA, SEATTLE ARTCC	Fort Lewis	USA	228	
	R8714H	FAA, SEATTLE ARTCC	Fort Lewis	USA	26	346
	R2102C	FAA, ATLANTA ARTCC	Fort McClellan	USA	27	
	R2102A	FAA, ATLANTA ARTCC	Fort McClellan	USA	27	
	R2102B	FAA, ATLANTA ARTCC	Fort McClellan	USA	27	27
	R8801B	FAA, CHICAGO ARTCC	Fort McCoy	USA	21	
	R8801A	FAA, CHICAGO ARTCC	Fort McCoy	USA	50	70
	PICKETT 3 MOA, VA	FAA, WASHINGTON, DC ARTCC	Fort Pickett	USA	23	
	PICKETT 1 MOA, VA	FAA, WASHINGTON, DC ARTCC	Fort Pickett	USA	45	
	PICKETT 2 MOA, VA	FAA, WASHINGTON, DC ARTCC	Fort Pickett	USA	93	161
	WARRIOR 2 LOW MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	USA	4	
	R3804B	FAA, HOUSTON ARTCC	Fort Polk	USA	14	
	WARRIOR 2 LOW MOA, LA (XA)	FAA, HOUSTON ARTCC	Fort Polk	USA	26	
	R3803A	FAA, HOUSTON ARTCC	Fort Polk	USA	41	
	R3804A	FAA, HOUSTON ARTCC	Fort Polk	USA	100	
	WARRIOR 2 HIGH MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	USA	886	
	WARRIOR 3 HIGH MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	USA	1010	
	WARRIOR 3 LOW MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	USA	1010	
	WARRIOR 1 LOW MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	USA	1800	
	WARRIOR 1 HIGH MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	USA	1798	5471
	R2205	FAA, FAIRBANKS APP	Fort Richardson	USA	136	
	R2203C	FAA, ANCHORAGE APP	Fort Richardson	USA	1	
	R2203A	FAA, ANCHORAGE APP	Fort Richardson	USA	6	
	R2203B	FAA, ANCHORAGE APP	Fort Richardson	USA	20	163
	R3602A	FAA, KANSAS CITY ARTCC	Fort Riley	USA	49	
	R3602B	FAA, KANSAS CITY ARTCC	Fort Riley	USA	58	107
	R2103A	USA, CAIRNS APP	Fort Rucker	USA		
	R2103B	FAA, JACKSONVILLE ARTCC	Fort Rucker	USA		
	R5801C	FAA, FORT WORTH ARTCC	Fort Sill	USA	18	
	R5801A	FAA, FORT WORTH ARTCC	Fort Sill	USA	34	
	R5801D	FAA, FORT WORTH ARTCC	Fort Sill	USA	36	
	R5601B	FAA, FORT WORTH ARTCC	Fort Sill	USA	55	
	R5801E	FAA, FORT WORTH ARTCC	Fort Sill	USA	9	153
	HOG LOW SOUTH MOA, AR (XB)	FAA, MEMPHIS ARTCC	Fort Smith	USA	2	
	HOG LOW NORTH MOA, AR (XB)	FAA, MEMPHIS ARTCC	Fort Smith	USA	22	
	HOG LOW SOUTH MOA, AR (XA)	FAA, MEMPHIS ARTCC	Fort Smith	USA	22	
	HOG JRTC MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	USA	25	
	HOG LOW NORTH MOA, AR (XA)	FAA, MEMPHIS ARTCC	Fort Smith	USA	27	
	HOG LOW NORTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	USA	653	
	HOG HIGH NORTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	USA	685	
	HOG LOW SOUTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	USA	790	
	HOG HIGH SOUTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	USA	1294	
	SHIRLEY 1 MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	USA	3067	8565
	R3005E	FAA, JACKSONVILLE ARTCC	Fort Stewart	USA	35	
	R3005B	FAA, JACKSONVILLE ARTCC	Fort Stewart	USA	46	
	R3005D	FAA, JACKSONVILLE ARTCC	Fort Stewart	USA	50	
	R3005A	FAA, JACKSONVILLE ARTCC	Fort Stewart	USA	71	

Special Use Airspace

FAA ID	FAA Name	Controlling Agency	Range/Complex/Installation Name	Use	Area (sq mi)	Total
R3005C		FAA, JACKSONVILLE ARTCC	Fort Stewart	USA	107	
FORT STEWART C1 MOA, GA		FAA, JACKSONVILLE ARTCC	Fort Stewart	USA	31	
FORT STEWART C2 MOA, GA		FAA, JACKSONVILLE ARTCC	Fort Stewart	USA	70	
FORT STEWART B1 MOA, GA		FAA, JACKSONVILLE ARTCC	Fort Stewart	USA	148	
FORT STEWART B2 MOA, GA		FAA, JACKSONVILLE ARTCC	Fort Stewart	USA	148	556
TWELVE MILE WEST MOA, IN		FAA, CHICAGO ARTCC	Fort Wayne	USA	208	
TWELVE MILE EAST MOA, IN		FAA, CHICAGO ARTCC	Fort Wayne	USA	371	579
DE SOTO 1 MOA, MS (XA)		FAA, HOUSTON ARTCC	Gulfport	USA	22	
DE SOTO 1 MOA, MS		FAA, HOUSTON ARTCC	Gulfport	USA	285	
DE SOTO 2 MOA, MS		FAA, HOUSTON ARTCC	Gulfport	USA	468	783
R5203		FAA, CLEVELAND ARTCC	Hancock Field	USA	707	707
R4811		FAA, OAKLAND ARTCC	Hawthorne Army Ammunition Plant	USA		
R3401A		FAA, INDIANAPOLIS ARTCC	Indianapolis	USA	43	
R3403A		FAA, INDIANAPOLIS ARTCC	Indianapolis	USA	83	
R3403B		FAA, INDIANAPOLIS ARTCC	Indianapolis	USA	27	
R3401B		FAA, INDIANAPOLIS ARTCC	Indianapolis	USA	35	158
JUNIPER NORTH MOA, OR		FAA, SEATTLE ARTCC	Kingley Field	USA	1610	
JUNIPER SOUTH MOA, OR		FAA, SEATTLE ARTCC	Kingley Field	USA	1734	
JUNIPER LOW MOA, OR		FAA, SEATTLE ARTCC	Kingley Field	USA	3045	6388
R5801		FAA, WASHINGTON, DC ARTCC	Latterkenny Ordnance Depot	USA		
R5803		FAA, WASHINGTON, DC ARTCC	Latterkenny Ordnance Depot	USA		
R2403A		FAA, MEMPHIS ARTCC	Little Rock	USA	7	
R2403B		FAA, MEMPHIS ARTCC	Little Rock	USA	10	17
R2302		FAA, ALBUQUERQUE ARTCC	Navajo Ordnance Depot	USA		
R2104E		FAA, MEMPHIS ARTCC	Redstone Arsenal	USA	4	
R2104A		FAA, MEMPHIS ARTCC	Redstone Arsenal	USA	17	
R2104D		FAA, MEMPHIS ARTCC	Redstone Arsenal	USA	17	
R2104C		FAA, MEMPHIS ARTCC	Redstone Arsenal	USA	4	
R2104B		FAA, MEMPHIS ARTCC	Redstone Arsenal	USA	4	25
SMOKY HIGH MOA, KS		FAA, KANSAS CITY ARTCC	Salina	USA	184	
SMOKY MOA, KS		FAA, KANSAS CITY ARTCC	Salina	USA	184	
BISON MOA, KS		FAA, KANSAS CITY ARTCC	Salina	USA	1074	1258
R5207		FAA, NEW YORK ARTCC	Seneca Army Depot	USA		
R2530		FAA, OAKLAND ARTCC	Sierra Army Depot	USA	4	4
LAKE ANDES MOA, SD		FAA, MINNEAPOLIS ARTCC	Sioux Falls	USA	3490	3490
PRUITT A MOA, IL (XC)		FAA, KANSAS CITY ARTCC	Springfield	USA	12	
HOWARD WEST MOA, IL		FAA, KANSAS CITY ARTCC	Springfield	USA	321	
PRUITT B MOA, IL		FAA, KANSAS CITY ARTCC	Springfield	USA	425	
PRUITT A MOA, IL (XA)		FAA, KANSAS CITY ARTCC	Springfield	USA	986	
HOWARD EAST MOA, IL		FAA, KANSAS CITY ARTCC	Springfield	USA	1844	
PRUITT A MOA, IL		FAA, KANSAS CITY ARTCC	Springfield	USA		
PRUITT A MOA, IL (XB)		FAA, KANSAS CITY ARTCC	Springfield	USA		3568
RED HILLS MOA, IN		FAA, INDIANAPOLIS ARTCC	Terre Haute	USA	1389	1389
R8403		FAA, SALT LAKE CITY ARTCC	Tooele Army Depot	USA	2	2
R3601B		FAA, KANSAS CITY ARTCC	Topeka	USA	16	
R3601A		FAA, KANSAS CITY ARTCC	Topeka	USA	54	69
RIVERS MOA, OK		FAA, FORT WORTH ARTCC	Tulsa	USA	1931	1931
R5206		FAA, NEW YORK APP	West Point	USA	4	4
R5107E		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	127	
R5107A		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	281	
R5111C		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	317	
R5111D		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	317	
R5111A		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	404	
R5107D		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	551	
R5107C		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	882	
R5107B		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	3138	
R5107J		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	77	
R5111B		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	404	
R5107H		FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	USA	813	7321
R2308D		FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USA	15	
R2308C		FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USA	29	
R2308E		FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USA	65	
R2308B		FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USA	77	
R2308F		FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USA	165	
R2308A		FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USA	208	
R2307		FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USA	291	
R2308A		FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USA	551	
R2308C		FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USA	37	
R2311		YUMA APP, YUMA MCAS	Yuma Proving Ground	USA	62	1500
BEAVER MOA, MN		FAA, MINNEAPOLIS ARTCC		USA	2485	
BIG BEAR MOA, MI		FAA, MINNEAPOLIS ARTCC		USA	1744	
BIG BEAR MOA, MI (XA)		FAA, MINNEAPOLIS ARTCC		USA	9	
BIRMINGHAM 2 MOA, AL		FAA, ATLANTA ARTCC		USA	1135	
BIRMINGHAM 2 MOA, AL (XA)		FAA, ATLANTA ARTCC		USA	44	
BIRMINGHAM 2 MOA, AL (XB)		FAA, ATLANTA ARTCC		USA	148	
BIRMINGHAM MOA, AL		FAA, ATLANTA ARTCC		USA	1185	
BRUSH CREEK MOA, OH		FAA, INDIANAPOLIS ARTCC		USA	719	
BUCKEYE MOA, OH		FAA, INDIANAPOLIS ARTCC		USA	1850	
CAMDEN RIDGE MOA, AL		FAA, ATLANTA ARTCC		USA	2154	
CANNON A MOA, MO		FAA, KANSAS CITY ARTCC		USA	282	
CANNON B MOA, MO		FAA, KANSAS CITY ARTCC		USA	16	

Special Use Airspace

Military Service	SUA Name	Controlling Agency	Range Complex/Installation Name	Unit	Acres (mi ²)	Totals
	CONDOR 1 MOA, ME	FAA, BOSTON ARTCC		USA	2417	
	CONDOR 2 MOA, ME	FAA, BOSTON ARTCC		USA	613	
	CRYPT CENTRAL MOA, IA	FAA, MINNEAPOLIS ARTCC		USA	1475	
	CRYPT NORTH MOA, IA	FAA, MINNEAPOLIS ARTCC		USA	1772	
	CRYPT SOUTH MOA, IA	FAA, MINNEAPOLIS ARTCC		USA	1321	
	DEEPWOODS MOA, ME	FAA, BANGOR APP CON		USA	204	
	DUKE MOA, PA	FAA, CLEVELAND ARTCC		USA	1639	
	FALCON 1 MOA, NY	FAA, BOSTON ARTCC		USA	2034	
	FALCON 3 MOA, NY	FAA, BOSTON ARTCC		USA	242	
	HART NORTH MOA, OR	FAA, SEATTLE ARTCC		USA	658	
	HART SOUTH MOA, OR	FAA, SEATTLE ARTCC		USA	1820	
	HAYS MOA, MT	FAA, SALT LAKE CITY ARTCC		USA	5356	
	JACKAL LOW MOA, AZ	FAA, ALBUQUERQUE ARTCC		USA	676	
	JACKAL LOW MOA, AZ (XA)	FAA, ALBUQUERQUE ARTCC		USA	21	
	JACKAL MOA, AZ	FAA, ALBUQUERQUE ARTCC		USA	3581	
	LINCOLN MOA, NE	FAA, MINNEAPOLIS ARTCC		USA	1304	
	LINDBERGH A MOA, MO	FAA, KANSAS CITY ARTCC		USA	976	
	LINDBERGH B MOA, MO	FAA, KANSAS CITY ARTCC		USA	887	
	LINDBERGH C MOA, MO	FAA, KANSAS CITY ARTCC		USA	782	
	LINDBERGH D MOA, MO	FAA, KANSAS CITY ARTCC		USA	537	
	LINDBERGH E MOA, MO	FAA, KANSAS CITY ARTCC		USA	611	
	MISTY 1 MOA, NY	FAA, CLEVELAND ARTCC		USA	597	
	MISTY 2 MOA, NY	FAA, CLEVELAND ARTCC		USA	715	
	MISTY 3 MOA, NY	FAA, CLEVELAND ARTCC		USA	519	
	MORENCI MOA, AZ	FAA, ALBUQUERQUE ARTCC		USA	1755	
	O NEILL MOA, NE	FAA, MINNEAPOLIS ARTCC		USA	2189	
	OUTLAW MOA, AZ	FAA, ALBUQUERQUE ARTCC		USA	1084	
	RESERVE MOA, AZ	FAA, ALBUQUERQUE ARTCC		USA	2528	
	RUBY 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC		USA	567	
	SALEM MOA, MO	FAA, KANSAS CITY ARTCC		USA	1432	
	SALEM MOA, MO (XA)	FAA, KANSAS CITY ARTCC		USA	27	
	SNOOPY EAST MOA, MN	FAA, MINNEAPOLIS ARTCC		USA	954	
	SNOOPY EAST MOA, MN (XA)	FAA, MINNEAPOLIS ARTCC		USA	119	
	SNOOPY WEST MOA, MN	FAA, MINNEAPOLIS ARTCC		USA	2783	
	SYRACUSE 1 MOA, NY	USA, WHEELER SACK APPROACH		USA	605	
	SYRACUSE 2A MOA, NY	USA, WHEELER SACK APPROACH		USA	251	
	SYRACUSE 3 MOA, NY	USA, WHEELER SACK APPROACH		USA	131	
	SYRACUSE 4 MOA, NY	USA, WHEELER SACK APPROACH		USA	166	
	YANKEE 1 MOA, NH	FAA, BOSTON ARTCC		USA	1815	
	YANKEE 2 MOA, NH	FAA, BOSTON ARTCC		USA	772	
	W107B	FAA, WASHINGTON, DC ARTCC	Atlantic City Range Complex	USN	225	
	W107C	FAA, WASHINGTON, DC ARTCC	Atlantic City Range Complex	USN	549	
	W107A	FAA, WASHINGTON, DC ARTCC	Atlantic City Range Complex	USN	4800	
	W104A	FAA, BOSTON ARTCC	Boston Range Complex	USN	315	
	W103	FAA, BOSTON ARTCC	Boston Range Complex	USN	1476	
	W104B	FAA, BOSTON ARTCC	Boston Range Complex	USN	1505	
	W102H	FAA, BOSTON ARTCC	Boston Range Complex	USN	3434	
	W102L	FAA, BOSTON ARTCC	Boston Range Complex	USN	3434	
	R2506	FAA, HI-DESERT TRACON, EDWARDS AFB	China Lake Range Complex	USN	48	
	R2524	FAA, HI-DESERT TRACON, EDWARDS AFB	China Lake Range Complex	USN	707	
	R2505	FAA, HI-DESERT TRACON, EDWARDS AFB	China Lake Range Complex	USN	778	
	R2512	FAA, LOS ANGELES ARTCC	EI Centro Range Complex	USN	75	
	R2510B	FAA, LOS ANGELES ARTCC	EI Centro Range Complex	USN	124	
	R2510A	FAA, LOS ANGELES ARTCC	EI Centro Range Complex	USN	181	
	R4803	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	28	
	R4810	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	87	
	R4804A	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	88	
	AUSTIN 2 MOA, NV (XA)	FAA, SALT LAKE CITY ARTCC	Fallon Range Complex	USN	95	
	RANCH HIGH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	98	
	R4812	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	101	
	AUSTIN 1 MOA, NV (XA)	FAA, SALT LAKE CITY ARTCC	Fallon Range Complex	USN	106	
	CARSON MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	130	
	GABBS NORTH MOA, NV (XA)	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	141	
	GABBS SOUTH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	286	
	RANCH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	314	
	R4816S	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	331	
	R4816N	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	405	
	AUSTIN 2 MOA, NV	FAA, SALT LAKE CITY ARTCC	Fallon Range Complex	USN	842	
	GABBS CENTRAL MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	921	
	RENO MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	1013	
	AUSTIN 1 MOA, NV	FAA, SALT LAKE CITY ARTCC	Fallon Range Complex	USN	2403	
	GABBS NORTH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	2690	
	GABBS CENTRAL MOA, NV (XA)	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	921	
	GABBS NORTH MOA, NV (XB)	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	2699	
	GABBS NORTH MOA, NV (XC)	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	141	
	GABBS NORTH MOA, NV (XD)	FAA, OAKLAND ARTCC	Fallon Range Complex	USN		
	GABBS NORTH MOA, NV (XE)	FAA, OAKLAND ARTCC	Fallon Range Complex	USN		
	R4813A	FAA, OAKLAND ARTCC	Fallon Range Complex	USN	417	
	R4813B	FAA, OAKLAND ARTCC	Fallon Range Complex	USN		
	BRADY LOW MOA, TX (XA)	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	USN	43	

Special Use Airspace

Military District	SUA Name	Controlling Agency	Range Complex/Restriction Name	User	Area (sq. mi.)	Totals
	BRADY LOW MOA, TX (XB)	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	USN	60	
	BRADY NORTH MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	USN	156	
	BROWNWOOD 4 MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	USN	321	
	BROWNWOOD 2 EAST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	USN	457	
	BROWNWOOD 2 WEST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	USN	555	
	BROWNWOOD 1 EAST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	USN	570	
	BROWNWOOD 2 WEST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	USN	582	
	BROWNWOOD 3 MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	USN	697	
	BRADY HIGH MOA, TX	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	USN	966	
	BRADY LOW MOA, TX	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	USN	966	
	R6312	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	153	
	W228A	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	898	
	W228B	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	1269	
	W228D	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	2167	
	W155A	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	USN	2236	
	W82	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	2608	
	W155E	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	USN	2676	
	W228C	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	3637	
	W159C	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	USN		
	KINGSVILLE 2 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	384	
	KINGSVILLE 5 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	901	
	PENSACOLA NORTH MOA, FL	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	USN	1214	
	PENSACOLA SOUTH MOA, FL	FAA, PENSACOLA TOWER	GOMEX Range Complex	USN	1391	
	KINGSVILLE 3 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	1840	
	KINGSVILLE 4 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	1856	
	KINGSVILLE 1 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	USN	3328	
	R3107	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	33	
	W187	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	46	
	R3101	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	52	
	W186	FAA, HONOLULU TWR	Hawaiian Islands Range Complex	USN	91	
	W191	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	282	
	W186	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	751	
	W190	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	1614	
	W192	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	3477	
	W194	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	4076	
	W193	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	4589	
	W189	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	8037	
	W188	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	USN	35539	
	W158F	FAA, JACKSONVILLE NAS TRACON	Jacksonville Range Complex	USN	172	
	W158E	FAA, JACKSONVILLE NAS TRACON	Jacksonville Range Complex	USN	545	
	W158B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	1038	
	W158A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	1961	
	W157B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	2307	
	W158B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	2786	
	W158A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	5793	
	W157A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	8106	
	W157C	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	10372	
	R2910(A)	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	13	
	R2910(B)	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	26	
	R2907B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	52	
	R2908	FAA, PENSACOLA TRACON	Jacksonville Range Complex	USN	52	
	R2910(C)	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	57	
	QUICK THRUST H MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	68	
	MAYPORT LOW MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	68	
	MAYPORT HIGH MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	68	
	QUICK THRUST F MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	68	
	R2909	FAA, JACKSONVILLE TRACON	Jacksonville Range Complex	USN	75	
	R2910	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	78	
	R2907A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	89	
	GATOR 2 MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	126	
	QUICK THRUST E MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	143	
	QUICK THRUST G MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	143	
	PALATKA 2 MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	280	
	QUICK THRUST J MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	325	
	QUICK THRUST I MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	413	
	PALATKA 1 MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	458	
	QUICK THRUST M MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	567	
	QUICK THRUST N MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	567	
	QUICK THRUST I MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	1258	
	GATOR 1 MOA, GA	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	1366	
	SNOWBIRD MOA, TN	FAA, ATLANTA ARTCC	Jacksonville Range Complex	USN	1444	
	W132B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	383	
	W132A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	1005	
	W133	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	1743	
	W134	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	USN	1743	
	W174B(B)	FAA, MIAMI ARTCC	Key West Range Complex	USN	211	
	W174E	FAA, MIAMI ARTCC	Key West Range Complex	USN	281	
	W174C(B)	FAA, MIAMI ARTCC	Key West Range Complex	USN	386	
	W174G	FAA, MIAMI ARTCC	Key West Range Complex	USN	457	
	W174F	FAA, MIAMI ARTCC	Key West Range Complex	USN	807	
	W174C(A)	FAA, MIAMI ARTCC	Key West Range Complex	USN	1000	

Special Use Airspace

Military Service	SUA Name	Controlling Agency	Range Complex/Installation Name	User	Area (sq. mi.)	Totals
	W465B	FAA, MIAMI ARTCC	Key West Range Complex	USN	1454	
	W466A	FAA, MIAMI ARTCC	Key West Range Complex	USN	1477	
	W174D	FAA, MIAMI ARTCC	Key West Range Complex	USN	2798	
	W174A	FAA, MIAMI ARTCC	Key West Range Complex	USN	3350	
	W174B(A)	FAA, MIAMI ARTCC	Key West Range Complex	USN	10198	
	R4404A	FAA, MEMPHIS ARTCC	Meridian Complex	USN	4	
	MERIDIAN 1 EAST MOA, MS	FAA, MEMPHIS ARTCC	Meridian Complex	USN	709	
	PINE HILL EAST MOA, MS	FAA, ATLANTA ARTCC	Meridian Complex	USN	1281	
	MERIDIAN 1 WEST MOA, MS	FAA, MEMPHIS ARTCC	Meridian Complex	USN	3932	
	PINE HILL WEST MOA, MS	FAA, ATLANTA ARTCC	Meridian Complex	USN		
	R4404B	FAA, MEMPHIS ARTCC	Meridian Complex	USN		
	R4404C	FAA, MEMPHIS ARTCC	Meridian Complex	USN		
	W106C	FAA, BOSTON ARTCC	Narragansett Range Complex	USN	227	
	W106D	FACSFAC, VACAPES, OCEANA NAS	Narragansett Range Complex	USN	288	
	W106A	FAA, BOSTON ARTCC	Narragansett Range Complex	USN	358	
	W106B	FAA, BOSTON ARTCC	Narragansett Range Complex	USN	504	
	W105B	FAA, BOSTON ARTCC	Narragansett Range Complex	USN	1315	
	W105A	FAA, BOSTON ARTCC	Narragansett Range Complex	USN	10334	
	R6611A	FAA, WASHINGTON, DC ARTCC	NAVSEA Dahlgren	USN	22	
	R6612	FAA, WASHINGTON, DC ARTCC	NAVSEA Dahlgren	USN	6	
	R6613A	FAA, WASHINGTON, DC ARTCC	NAVSEA Dahlgren	USN	18	
	W59A	FAA, HOUSTON ARTCC	New Orleans NAS JRB	USN	2528	
	W59B	FAA, HOUSTON ARTCC	New Orleans NAS JRB	USN	3398	
	R5113	FAA, ALBUQUERQUE ARTCC	Office of Naval Research, Atmospheric Sciences	USN	19	
	R4002	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	USN	40	
	R4007	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	USN	162	
	R4005	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	USN	318	
	R4006	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	USN	1458	
	R4009	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	USN		
	R6609	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	USN	125	
	R2519	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	22	
	R2535A	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	22	
	R2535B	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	83	
	W289	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	108	
	W290	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	108	
	W61	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	787	
	W602	FAA, HOUSTON ARTCC	Pt. Mugu Range Complex	USN	3077	
	W537	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	3077	
	W532	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	8517	
	W60	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	9518	
	W289N	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	USN	11756	
	W513	FAA, OAKLAND ARTCC	San Francisco Range Complex	USN	574	
	W285B	FAA, OAKLAND ARTCC	San Francisco Range Complex	USN	892	
	W285A	FAA, OAKLAND ARTCC	San Francisco Range Complex	USN	2727	
	W280	FAA, OAKLAND ARTCC	San Francisco Range Complex	USN	5671	
	W283	FAA, OAKLAND ARTCC	San Francisco Range Complex	USN	5909	
	W291	FAA, LOS ANGELES ARTCC	SOCAL Range Complex	USN	113057	
	R5314D	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	3	
	R5314E	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	5	
	R5301	FAA, WASHINGTON ARTCC	VACAPES Range Complex	USN	6	
	R5302A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	11	
	R5302C	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	11	
	R5314F	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	22	
	R5313C	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	22	
	W60A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	27	
	W60C	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	33	
	R660B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	33	
	R5314G	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	44	
	R5314A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	46	
	R5314C	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	53	
	R5314B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	58	
	R5313D	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	61	
	W50B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	63	
	R5302B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	67	
	R5314H	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	77	
	R5313B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	78	
	STUMPY POINT MOA, NC	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	123	
	R5314J	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	211	
	PAMLICO A MOA, NC	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	228	
	W72A(B)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	686	
	PAMLICO B MOA, NC	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	854	
	W110	USN, FACSFAC, VACAPES	VACAPES Range Complex	USN	1847	
	W687A	USN, FACSFAC, VACAPES	VACAPES Range Complex	USN	2278	
	W72A(A)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	3630	
	W696	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	9607	
	W72B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN	10367	
	R5313A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	USN		
	R6604	FAA, WASHINGTON, DC ARTCC	Wallops Islands	NASA	98	
	R6703B	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	USN	4	
	R6703D	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	USN	5	
	R5701(A)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	11	

Special Use Airspace

Military Service	SUA Name	Granting Agency	Range Complex / Installation Name	Use	Area (sq. mi.)	Totals
	R8703A	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	USN	13	
	R8703C	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	USN	20	
	R8701	USN, WHIDBEY ISLAND NAS APP	Whidbey Island Range Complex	USN	21	
	R5701(C)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	21	
	CHINOOK A MOA, WA	USN, WHIDBEY IS NAS APP	Whidbey Island Range Complex	USN	23	
	OKANOGAN C MOA, WA (XA)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	27	
	R5701(B)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	31	
	CHINOOK B MOA, WA	USN, WHIDBEY IS NAS APP	Whidbey Island Range Complex	USN	33	
	OKANOGAN B MOA, WA (XA)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	53	
	R5701(D)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	64	
	ROBERTS MOA, CA	FAA, OAKLAND ARTCC	Whidbey Island Range Complex	USN	87	
	W83	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	4652	
	R5708	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	106	
	BOARDMAN MOA, OR	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	356	
	OLYMPIC B MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	696	
	OKANOGAN C MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	711	
	OLYMPIC A MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	918	
	OKANOGAN B MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	956	
	W237B(LO)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	1514	
	W237C	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	1540	
	W237D	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	1823	
	W237E	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	1809	
	W237A(LO)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	2030	
	ROOSEVELT B MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	2182	
	W237G	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	2318	
	OKANOGAN A MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	2582	
	ROOSEVELT A MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	3137	
	W237F	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	3887	
	W237J	FAA, OAKLAND ARTCC	Whidbey Island Range Complex	USN	4287	
	W570	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN	4470	
	W237H	FAA, OAKLAND ARTCC	Whidbey Island Range Complex	USN	5687	
	R5701(E)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	USN		
	HUNTER LOW E MOA, CA	FAA, OAKLAND ARTCC		USN	69	
	HUNTER LOW C MOA, CA	FAA, OAKLAND ARTCC		USN	82	
	HUNTER LOW B MOA, CA	FAA, OAKLAND ARTCC		USN	147	
	HUNTER LOW D MOA, CA	FAA, OAKLAND ARTCC		USN	207	
	HUNTER LOW A MOA, CA	FAA, OAKLAND ARTCC		USN	491	
	FOOTHILL 1 MOA, CA	FAA, OAKLAND ARTCC		USN	825	
	FOOTHILL 2 MOA, CA	FAA, OAKLAND ARTCC		USN	887	
	HUNTER HIGH MOA, CA	FAA, OAKLAND ARTCC		USN	996	
	R2515	FAA, HI-DESERT TRACON, EDWARDS AFB		USN	1367	
	SAN ONOFRE LOW MOA, CA	FAA, SOCIAL TRACON	Camp Pendleton Range Complex	USMC	41	
	R2503A	FAA, LOS ANGELES ARTCC	Camp Pendleton Range Complex	USMC	72	
	R2503C	FAA, LOS ANGELES ARTCC	Camp Pendleton Range Complex	USMC	85	
	SAN ONOFRE HIGH MOA, CA	FAA, SOCIAL TRACON	Camp Pendleton Range Complex	USMC	87	
	R2503B	FAA, LOS ANGELES ARTCC	Camp Pendleton Range Complex	USMC	108	
	R5306C	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	USMC	4	
	R5306D	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	USMC	4	
	R5306E	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	USMC	4	
	R5304A	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	USMC	24	
	R5304B	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	USMC	24	
	R5306A	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	USMC	24	
	R5304C	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	USMC	24	
	R5303A	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	USMC	25	
	R5303B	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	USMC	25	
	R5303C	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	USMC	25	
	HATTERAS F MOA, NC	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	USMC	102	
	W122(B)	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	USMC	230	
	W122(A)	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	USMC	18748	
	W74(B)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	USMC	9	
	BEAUFORT 2 MOA, SC (XA)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	USMC	12	
	BEAUFORT 1 MOA, SC (XA)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	USMC	65	
	W74(A)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	USMC	173	
	BEAUFORT 1 MOA, SC	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	USMC	255	
	BEAUFORT 3 MOA, SC	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	USMC	276	
	BEAUFORT 2 MOA, SC	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	USMC	417	
	R6608A	FAA, DULLES INTL TWR	Quantico Range Complex	USMC	11	
	R6608C	FAA, DULLES INTL TWR	Quantico Range Complex	USMC	17	
	R6608B	FAA, DULLES INTL TWR	Quantico Range Complex	USMC	27	
	DEMO 2 MOA, VA	FAA, WASHINGTON, DC ARTCC	Quantico Range Complex	USMC	55	
	DEMO 1 MOA, VA	FAA, WASHINGTON, DC ARTCC	Quantico Range Complex	USMC	84	
	DEMO 3 MOA, VA	FAA, WASHINGTON, DC ARTCC	Quantico Range Complex	USMC	84	
	SUNDANCE MOA, CA (XA)	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	USMC	4	
	SUNDANCE MOA, CA	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	USMC	48	
	R2501W	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	USMC	76	
	R2501S	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	USMC	197	
	R2501N	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	USMC	237	
	R2501E	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	USMC	304	
	BRISTOL MOA, CA	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	USMC	403	
	R2507N	FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	214	

Special Use Airspace

MOA Name	MOA Name	Controlling Agency	Range Complex/Installation Name	User	Area (sq. mi.)	Totals
R2507S		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	242	
TURTLE MOA, AZ		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	1716	
KANE WEST MOA, CA		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	72	
ABEL BRAVO MOA, CA		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	89	
DOVE MOA, AZ		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	204	
ABEL SOUTH MOA, CA		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	257	
ABEL EAST MOA, CA		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	309	
KANE SOUTH MOA, CA		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	611	
ABEL NORTH MOA, CA		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	668	
QUAIL MOA, AZ		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	1055	
R2301W		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	1194	
KANE EAST MOA, CA		FAA, LOS ANGELES ARTCC	Yuma Range Complex	USMC	4637	
R2901F		FAA, MIAMI ARTCC	Avon Park	USAF	15	
R2901C		FAA, MIAMI ARTCC	Avon Park	USAF	25	
R2901G		FAA, MIAMI ARTCC	Avon Park	USAF	27	
R2901D		FAA, MIAMI ARTCC	Avon Park	USAF	28	
R2901I		FAA, MIAMI ARTCC	Avon Park	USAF	31	
R2901H		FAA, MIAMI ARTCC	Avon Park	USAF	32	
R2901E		FAA, MIAMI ARTCC	Avon Park	USAF	91	
R2901B		FAA, MIAMI ARTCC	Avon Park	USAF	145	
R2901A		FAA, MIAMI ARTCC	Avon Park	USAF	166	
JENA 1 MOA, LA (XD)		FAA, HOUSTON ARTCC	Bartolde AFB	USAF	1	
JENA 1 MOA, LA (XC)		FAA, HOUSTON ARTCC	Bartolde AFB	USAF	8	
R3901A(B)		FAA, HOUSTON ARTCC	Bartolde AFB	USAF	24	
JENA 1 MOA, LA (XB)		FAA, HOUSTON ARTCC	Bartolde AFB	USAF	26	
R3901A(A)		FAA, HOUSTON ARTCC	Bartolde AFB	USAF	57	
R3901B		FAA, HOUSTON ARTCC	Bartolde AFB	USAF	101	
R3901C		FAA, HOUSTON ARTCC	Bartolde AFB	USAF	101	
ANNE LOW MOA, AR (XA)		FAA, FORT WORTH ARTCC	Bartolde AFB	USAF	114	
JONES MOA, LA		FAA, FORT WORTH ARTCC	Bartolde AFB	USAF	359	
LADY MOA, LA		FAA, FORT WORTH ARTCC	Bartolde AFB	USAF	366	
ANNE HIGH MOA, AR		FAA, FORT WORTH ARTCC	Bartolde AFB	USAF	683	
ANNE LOW MOA, AR		FAA, FORT WORTH ARTCC	Bartolde AFB	USAF	683	
JENA 1 MOA, LA (XA)		FAA, HOUSTON ARTCC	Bartolde AFB	USAF	1041	
JENA 1 MOA, LA		FAA, HOUSTON ARTCC	Bartolde AFB	USAF		
R4105A		FAA, CAPE APP	Barnes ANGB	USAF		
R4105B		FAA, CAPE APP	Barnes ANGB	USAF		
FUZZY MOA, AZ		FAA, ALBUQUERQUE ARTCC	Barry M. Goldwater Range	USAF	449	
WHITMORE 1 MOA, CA		FAA, OAKLAND ARTCC	Beale AFB	USAF	583	
WHITMORE 3 MOA, CA		FAA, OAKLAND ARTCC	Beale AFB	USAF	616	
WHITMORE 2 MOA, CA		FAA, OAKLAND ARTCC	Beale AFB	USAF	616	
MAXWELL 1 MOA, CA		FAA, OAKLAND ARTCC	Beale AFB	USAF	875	
MAXWELL 2 MOA, CA		FAA, OAKLAND ARTCC	Beale AFB	USAF	924	
MAXWELL 3 MOA, CA		FAA, OAKLAND ARTCC	Beale AFB	USAF	924	
CHINA MOA, CA		FAA, OAKLAND ARTCC	Beale AFB	USAF	624	
AIRBURST C MOA, CO		FAA, DENVER ARTCC	Buckley ANGB	USAF	11	
AIRBURST B MOA, CO		FAA, DENVER ARTCC	Buckley ANGB	USAF	14	
AIRBURST A MOA, CO		FAA, DENVER ARTCC	Buckley ANGB	USAF	167	
LA VETA LOW MOA, CO		FAA, DENVER ARTCC	Buckley ANGB	USAF	203	
LA VETA HIGH MOA, CO		FAA, DENVER ARTCC	Buckley ANGB	USAF	1264	
TWO BUTTES HIGH MOA, CO		FAA, DENVER ARTCC	Buckley ANGB	USAF	1432	
TWO BUTTES LOW MOA, CO		FAA, DENVER ARTCC	Buckley ANGB	USAF	1432	
CHEYENNE LOW MOA, CO		FAA, DENVER ARTCC	Buckley ANGB	USAF	1697	
R5401		FAA, MINNEAPOLIS ARTCC	Camp Grafton	USAF	3	
R6412A		FAA, SALT LAKE CITY TRACON	Camp Williams	USAF	31	
R6412B		FAA, SALT LAKE CITY TRACON	Camp Williams	USAF	31	
R5105		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	139	
R5104A		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	208	
TAIBAN MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	235	
BRONCO 2 MOA, TX		FAA, FORT WORTH ARTCC	Cannon AFB	USAF	608	
PECOS SOUTH LOW MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	951	
PECOS NORTH LOW MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	1038	
BRONCO 1 MOA, TX		FAA, FORT WORTH ARTCC	Cannon AFB	USAF	1040	
MT DORA EAST HIGH MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	1182	
MT DORA EAST LOW MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	1162	
PECOS NORTH HIGH MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	1239	
MT DORA NORTH HIGH MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	1259	
MT DORA NORTH LOW MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	1256	
PECOS SOUTH HIGH MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	1330	
MT DORA WEST HIGH MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	1606	
MT DORA WEST LOW MOA, NM		FAA, ALBUQUERQUE ARTCC	Cannon AFB	USAF	1609	
BRONCO 3 MOA, TX		FAA, FORT WORTH ARTCC	Cannon AFB	USAF	1736	
BRONCO 4 MOA, TX		FAA, FORT WORTH ARTCC	Cannon AFB	USAF	1762	
R2932		FAA, MIAMI ARTCC	Cape Canaveral Range Complex	USAF	99	
R2933		FAA, MIAMI ARTCC	Cape Canaveral Range Complex	USAF	99	
R2934		FAA, MIAMI ARTCC	Cape Canaveral Range Complex	USAF	169	
R2935		FAA, MIAMI ARTCC	Cape Canaveral Range Complex	USAF	405	
COLUMBUS 2 MOA, MS		FAA, MEMPHIS ARTCC	Columbus AFB	USAF	643	
COLUMBUS 4 MOA, MS		FAA, MEMPHIS ARTCC	Columbus AFB	USAF	1375	
COLUMBUS 3 MOA, MS		FAA, MEMPHIS ARTCC	Columbus AFB	USAF	2659	

Special Use Airspace

Military Service	SUA Name	Controlling Agency	Route Compliance Information Notes	Unit	Area (sq. mi.)	Total
	COLUMBUS 1 MOA, MS	FAA, MEMPHIS ARTCC	Columbus AFB	USAF	2705	
	TOMBSTONE A MOA, AZ	FAA, ALBUQUERQUE ARTCC	David-Monthan AFB	USAF	520	
	TOMBSTONE B MOA, AZ	FAA, ALBUQUERQUE ARTCC	David-Monthan AFB	USAF	1320	
	TOMBSTONE C MOA, AZ	FAA, ALBUQUERQUE ARTCC	David-Monthan AFB	USAF	3014	
	ISABELLA MOA, CA (XE)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF	21	
	ISABELLA MOA, CA (XG)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF	41	
	BUCKHORN MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	USAF	58	
	BISHOP MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	USAF	128	
	BARSTOW MOA, CA	FAA, HI-DESERT TRACON, EDWARDS, CA	Edwards AFB	USAF	162	
	BAKERSFIELD MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	USAF	300	
	PORTERVILLE MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	USAF	465	
	SALINE MOA, CA (XA)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF	891	
	SHOSHONE MOA, CA (XB)	FAA, LOS ANGELES ARTCC	Edwards AFB	USAF	899	
	PANAMINT MOA, CA (XA)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF	1117	
	PANAMINT MOA, CA (XB)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF	1117	
	SHOSHONE MOA, CA (XA)	FAA, LOS ANGELES ARTCC	Edwards AFB	USAF	1167	
	POWDER RIVER B MOA, WY	FAA, DENVER ARTCC	Edwards AFB	USAF	1381	
	SALINE MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF	1689	
	OWENS MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF	2013	
	PANAMINT MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF	2051	
	ISABELLA MOA, CA (XA)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF	2679	
	POWDER RIVER B MOA, WY (XA)	FAA, DENVER ARTCC	Edwards AFB	USAF	26	
	POWDER RIVER B MOA, WY (XB)	FAA, DENVER ARTCC	Edwards AFB	USAF	709	
	POWDER RIVER B MOA, WY (XC)	FAA, DENVER ARTCC	Edwards AFB	USAF		
	POWDER RIVER B MOA, WY (XD)	FAA, DENVER ARTCC	Edwards AFB	USAF		
	ISABELLA MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF		
	ISABELLA MOA, CA (XB)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF		
	ISABELLA MOA, CA (XC)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF		
	ISABELLA MOA, CA (XD)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF		
	ISABELLA MOA, CA (XF)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	USAF		
	POWDER RIVER A MOA, MT	FAA, SALT LAKE CITY ARTCC	Edwards AFB	USAF		
	POWDER RIVER A MOA, MT (XA)	FAA, SALT LAKE CITY ARTCC	Edwards AFB	USAF		
	POWDER RIVER A MOA, MT (XB)	FAA, SALT LAKE CITY ARTCC	Edwards AFB	USAF		
	POWDER RIVER A MOA, MT (XC)	FAA, SALT LAKE CITY ARTCC	Edwards AFB	USAF		
	POWDER RIVER A MOA, MT (XD)	FAA, SALT LAKE CITY ARTCC	Edwards AFB	USAF		
	EGLIN F MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	5	
	R2918	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	18	
	R2915C	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	34	
	R2915B	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	46	
	R2919A	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	46	
	R2914B	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	71	
	R2919B	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	84	
	EGLIN A WEST MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	90	
	EGLIN A EAST MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	98	
	EGLIN D MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	133	
	EGLIN C MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	144	
	R2915A	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	202	
	EGLIN B MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	222	
	R2914A	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	387	
	ROSE HILL MOA, AL	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	650	
	EGLIN E MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	1144	
	W470C	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	1147	
	W151C	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	1729	
	W470A	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	2015	
	W151D	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	2114	
	W470B	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	2131	
	W151B	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	2521	
	W151A	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF	2657	
	R2917	USAF, EGLIN AFB APP	Eglin AFB	USAF		
	W151E	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF		
	W151F	FAA, JACKSONVILLE ARTCC	Eglin AFB	USAF		
	BUFFALO MOA, AK (XC)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	4	
	BUFFALO MOA, AK (XD)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	10	
	YUKON 2 MOA, AK (XE)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	16	
	EIELSON MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	21	
	YUKON 1 MOA, AK (XC)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	25	
	VIPER A MOA, AK	FAA, FAIRBANKS TWR	Eielson AFB	USAF	27	
	VIPER A MOA, AK (XB)	FAA, FAIRBANKS TWR	Eielson AFB	USAF	27	
	YUKON 3A LOW MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	36	
	VIPER A MOA, AK (XA)	FAA, FAIRBANKS TWR	Eielson AFB	USAF	53	
	BIRCH MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	58	
	BUFFALO MOA, AK (XB)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	59	
	YUKON 2 MOA, AK (XCA)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	66	
	VIPER B MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	80	
	FOX 2 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	93	
	YUKON 1 MOA, AK (XB)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	101	
	YUKON 1 MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	122	
	R2211	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	133	
	BUFFALO MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	171	
	YUKON 2 MOA, AK (XD)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	187	
	BIRCH MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	421	
	YUKON 4 MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	USAF	491	

Special Use Airspace

Military Service	SUA Name	Controlling Agency	Range Complex/Installation Name	User	Area (sq. mi.)	Notes
	YUKON 2 MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	685	
	EIELSON MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	715	
	FOX 1 MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	1134	
	YUKON 3B MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	1494	
	BUFFALO MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	1835	
	YUKON 3 HIGH MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	2298	
	YUKON 3A LOW MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	2269	
	YUKON 5 MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	2678	
	YUKON 4 MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	3331	
	FOX 3 MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	3878	
	YUKON 1 MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	3737	
	YUKON 2 MOA, AK	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF	4896	
	YUKON 2 MOA, AK (XB)	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF		
	YUKON 2 MOA, AK (XCB)	FAA, ANCHORAGE ARTCC	Elieison AFB	USAF		
	W147C	FAA, HOUSTON ARTCC	Ellington Field	USAF	888	
	W147A	FAA, HOUSTON ARTCC	Ellington Field	USAF	4490	
	W147D	FAA, HOUSTON ARTCC	Ellington Field	USAF	5489	
	STONY B MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	USAF	2962	
	SUSITNA MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	USAF	2457	
	W612	FAA, ANCHORAGE ARTCC	Elmendorf AFB	USAF	2540	
	NAKNEK 2 MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	USAF	2741	
	NAKNEK 1 MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	USAF	3858	
	GALENA MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	USAF	3870	
	STONY A MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	USAF	4017	
	CHURCHILL HIGH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	USAF	70	
	CHURCHILL LOW MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	USAF	70	
	R3007E	FAA, JACKSONVILLE ARTCC	Georgia ANG Training Site	USAF (ANG)	5	
	R3007(A)	FAA, JACKSONVILLE ARTCC	Georgia ANG Training Site	USAF (ANG)	7	
	R3007D	FAA, JACKSONVILLE ARTCC	Georgia ANG Training Site	USAF (ANG)	32	
	R3007B	FAA, JACKSONVILLE ARTCC	Georgia ANG Training Site	USAF (ANG)	57	
	R3007A	FAA, JACKSONVILLE ARTCC	Georgia ANG Training Site	USAF (ANG)	68	
	R3007C	FAA, JACKSONVILLE ARTCC	Georgia ANG Training Site	USAF (ANG)	83	
	R8402B	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	35	
	R8409B	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	47	
	LUCIN C MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	119	
	R8404C	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	187	
	R8404B	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	201	
	R8404D	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	201	
	R8407	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	690	
	R8408A	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	848	
	R8402A	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	985	
	LUCIN B MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	989	
	SEVIER A MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	1008	
	SEVIER C MOA, NV	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	1008	
	R8404A	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	1117	
	LUCIN A MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	1527	
	R8405	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	1940	
	SEVIER B MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	2195	
	SEVIER D MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF	2195	
	GANDY MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	USAF		
	BEAK B MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	USAF	606	
	BEAK C MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	USAF	637	
	BEAK A MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	USAF	689	
	VALENTINE MOA, TX	FAA, ALBUQUERQUE ARTCC	Holloman AFB	USAF	2449	
	TALON EAST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	USAF		
	TALON LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	USAF		
	TALON WEST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	USAF		
	CATO MOA, NM	FAA, ALBUQUERQUE ARTCC	Kirtland AFB	USAF	2658	
	FARMVILLE MOA, VA (XA)	FAA, WASHINGTON, DC ARTCC	Langley AFB	USAF	10	
	FARMVILLE MOA, VA (XB)	FAA, WASHINGTON, DC ARTCC	Langley AFB	USAF	10	
	EVERS MOA, WV	FAA, WASHINGTON, DC ARTCC	Langley AFB	USAF	478	
	FARMVILLE MOA, VA	FAA, WASHINGTON, DC ARTCC	Langley AFB	USAF	1185	
	CRYSTAL MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	USAF	1379	
	LAUGHLIN 2 MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	USAF	2637	
	CRYSTAL NORTH MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	USAF	1379	
	LAUGHLIN 3 HIGH MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	USAF		
	LAUGHLIN 3 LOW MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	USAF		
	LAUGHLIN 1 MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	USAF	4630	
	R2305	FAA, ALBUQUERQUE ARTCC	Luke AFB	USAF	187	
	R2304	FAA, ALBUQUERQUE ARTCC	Luke AFB	USAF	345	
	BAGDAD 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	USAF	1065	
	R2301E	FAA, ALBUQUERQUE ARTCC	Luke AFB	USAF	1551	
	GLADDEN 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	USAF	1670	
	SUNNY MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	USAF	2328	
	SELLS LOW MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	USAF	3131	
	SELLS 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	USAF	3962	
	AVON EAST MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	USAF	38	
	BASINGER MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	USAF	42	
	AVON NORTH MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	USAF	94	
	AVON SOUTH MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	USAF	116	
	MARIAN MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	USAF	204	

Special Use Airspace

Military Services	SUA Name	Controlling Agency	Reporting Complex (as of 10/01/00)	Class	Altitude (ft)	Total
	LAKE PLACID MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	USAF	1087	
	W198	FAA, MIAMI ARTCC	MacDill AFB	USAF	7485	
	TIGER NORTH MOA, ND (XA)	FAA, MINNEAPOLIS ARTCC	McChord AFB	USAF	112	
	TIGER SOUTH MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	USAF	1721	
	DEVILS LAKE WEST MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	USAF	1733	
	DEVILS LAKE EAST MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	USAF	1767	
	TIGER NORTH MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	USAF	2096	
	R5115	FAA, ALBUQUERQUE ARTCC	McChord AFB	USAF		
	R6318	FAA, ALBUQUERQUE ARTCC	McChord AFB	USAF		
	R6316	FAA, HOUSTON ARTCC	McChord AFB	USAF		
	R6317	FAA, HOUSTON ARTCC	McChord AFB	USAF		
	R2312	LIBBY AAF TWR	McChord AFB	USAF		
	EUREKA HIGH MOA, KS	FAA, KANSAS CITY ARTCC	McConnell AFB	USAF	1645	
	EUREKA LOW MOA, KS	FAA, KANSAS CITY ARTCC	McConnell AFB	USAF	1645	
	POWERS MOA, ND	FAA, MINNEAPOLIS ARTCC	Mingot AFB	USAF	586	
	R3008A	USAF, VALDOSTA APP	Moody AFB	USAF	6	
	R3008B	USAF, VALDOSTA APP	Moody AFB	USAF	20	
	R3008C	USAF, VALDOSTA APP	Moody AFB	USAF	67	
	R3008D	USAF, VALDOSTA APP	Moody AFB	USAF	93	
	MOODY 2 NORTH MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	USAF	318	
	MOODY 2 SOUTH MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	USAF	405	
	LIVE OAK MOA, FL	FAA, JACKSONVILLE ARTCC	Moody AFB	USAF	1208	
	MOODY 3 MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	USAF	1257	
	MOODY 1 MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	USAF	4711	
	R3202(L0)	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	USAF		
	R3204A	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	USAF		
	R3204B	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	USAF		
	OWYHEE MOA, ID	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	USAF	1759	
	JARBIDGE MOA, ID	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	USAF		
	JARBIDGE MOA, ID (XA)	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	USAF		
	JARBIDGE MOA, ID (XB)	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	USAF		
	JARBIDGE MOA, ID (XC)	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	USAF		
	PARADISE EAST MOA, NV	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	USAF		
	PARADISE WEST MOA, OR	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	USAF		
	R4807B	FAA, LOS ANGELES ARTCC	Nellis AFB	USAF	100	
	R4808E	FAA, LOS ANGELES ARTCC	Nellis AFB	USAF	280	
	SILVER MOA, CA	FAA, LOS ANGELES ARTCC	Nellis AFB	USAF	507	
	R4809W	FAA, LOS ANGELES ARTCC	Nellis AFB	USAF	1177	
	R4807A	FAA, LOS ANGELES ARTCC	Nellis AFB	USAF	1696	
	DESERT MOA, NV	FAA, LOS ANGELES ARTCC	Nellis AFB	USAF	5538	
	DESERT MOA, NV (XA)	FAA, LOS ANGELES ARTCC	Nellis AFB	USAF		
	DESERT MOA, NV (XB)	FAA, LOS ANGELES ARTCC	Nellis AFB	USAF		
	REVELLE NORTH MOA, NV	FAA, SALT LAKE CITY ARTCC	Nellis AFB	USAF		
	REVELLE SOUTH MOA, NV	FAA, SALT LAKE CITY ARTCC	Nellis AFB	USAF		
	R4305	FAA, MINNEAPOLIS ARTCC	Offutt AFB	USAF	1237	
	R4207	FAA, MINNEAPOLIS ARTCC	Phelps-Collins ANGB	USAF	1008	
	GAMECOCK A MOA, NC	FAA, WASHINGTON, DC ARTCC	Pope AFB	USAF	554	
	RANDOLPH 2B MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	USAF	317	
	RANDOLPH 1B MOA, TX	FAA, SAN ANTONIO TRACON	Randolph AFB	USAF	755	
	TEXON MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	USAF	1155	
	RANDOLPH 1A MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	USAF	1378	
	RANDOLPH 2A MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	USAF	1445	
	SEYMOUR JOHNSON ECHO MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	USAF	1034	
	PHELPS A MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	USAF		
	PHELPS B MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	USAF		
	PHELPS C MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	USAF		
	BULLDOG A MOA, GA (XA)	FAA, ATLANTA ARTCC	Shaw AFB	USAF	20	
	BULLDOG D MOA, GA (XA)	FAA, ATLANTA ARTCC	Shaw AFB	USAF	30	
	BULLDOG A MOA, GA (XB)	FAA, ATLANTA ARTCC	Shaw AFB	USAF	33	
	R6002A	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	54	
	R6002B	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	54	
	BULLDOG D MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	USAF	79	
	W177A(B)	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	210	
	GAMECOCK B MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	248	
	GAMECOCK I MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	405	
	W181B	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	561	
	W177B	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	757	
	GAMECOCK D MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	839	
	BULLDOG A MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	USAF	1052	
	W181A	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	1264	
	W177A(A)	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF	1684	
	BULLDOG B MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	USAF	1877	
	GAMECOCK C MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF		
	GAMECOCK C MOA, SC (XA)	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF		
	GAMECOCK C MOA, SC (XB)	FAA, JACKSONVILLE ARTCC	Shaw AFB	USAF		
	POINSETT MOA, SC	USAF, SHAW APP CON	Shaw AFB	USAF		
	POINSETT MOA, SC (XA)	USAF, SHAW APP CON	Shaw AFB	USAF		
	POINSETT MOA, SC (XB)	USAF, SHAW APP CON	Shaw AFB	USAF		
	WASHITA MOA, OK	FAA, FORT WORTH ARTCC	Sheppard AFB	USAF	866	
	SHEPPARD 1 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	USAF	1033	
	HOLLIS MOA, OK	FAA, FORT WORTH ARTCC	Sheppard AFB	USAF	1204	

Special Use Airspace

Military Service	SUA Name	Controlling Agency	Range Complex (old) / Base Name	User	Area (sq. mi.)	Total
	SHEPPARD 2 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	USAF	1283	
	WESTOVER 1 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	USAF	1986	
	WESTOVER 2 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	USAF	2178	
	R2905A	TYNDALL AFB RADAR APP	Tyndall AFB	USAF	15	
	R2905B	TYNDALL AFB RADAR APP	Tyndall AFB	USAF	25	
	TYNDALL F MOA, FL (XA)	USAF, TYNDALL RADAR APP CON	Tyndall AFB	USAF	224	
	TYNDALL F MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	USAF	297	
	TYNDALL D MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	USAF	310	
	TYNDALL B MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	USAF	347	
	TYNDALL C MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	USAF	559	
	TYNDALL G MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	USAF	559	
	TYNDALL E MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	USAF	893	
	TYNDALL H MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	USAF	2557	
	R3807	FAA, HOUSTON ARTCC	Tyndall AFB	USAF		
	R2938	FAA, JACKSONVILLE ARTCC	Tyndall AFB	USAF		
	R2916	FAA, MIAMI ARTCC	Tyndall AFB	USAF		
	ADA WEST MOA, KS	FAA, KANSAS CITY ARTCC	Vance AFB	USAF	1063	
	ADA EAST MOA, KS	FAA, KANSAS CITY ARTCC	Vance AFB	USAF	1121	
	VANCE 1B MOA, OK	FAA, KANSAS CITY ARTCC	Vance AFB	USAF	2234	
	VANCE 1A MOA, OK	FAA, KANSAS CITY ARTCC	Vance AFB	USAF	6187	
	R2534A	FAA, LOS ANGELES ARTCC	Vandenberg AFB	USAF	52	
	R2534B	FAA, LOS ANGELES ARTCC	Vandenberg AFB	USAF	53	
	R2517	FAA, LOS ANGELES ARTCC	Vandenberg AFB	USAF	94	
	R2518	FAA, LOS ANGELES ARTCC	Vandenberg AFB	USAF	134	
	VOLK SOUTH MOA, WI (XB)	FAA, CHICAGO ARTCC	Volk Field ANGB	USAF	6	
	VOLK SOUTH MOA, WI (XC)	FAA, CHICAGO ARTCC	Volk Field ANGB	USAF	10	
	R8904B	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	USAF	11	
	R8904A	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	USAF	69	
	VOLK SOUTH MOA, WI (XA)	FAA, CHICAGO ARTCC	Volk Field ANGB	USAF	498	
	VOLK WEST MOA, WI	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	USAF	512	
	FALLS 2 MOA, WI	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	USAF	524	
	FALLS 1 MOA, WI	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	USAF	829	
	R8903	FAA, CHICAGO ARTCC	Volk Field ANGB	USAF	841	
	VOLK EAST MOA, WI	FAA, CHICAGO ARTCC	Volk Field ANGB	USAF	1658	
	MINNOW MOA, WI	FAA, CHICAGO ARTCC	Volk Field ANGB	USAF	1737	
	R8413	FAA, DENVER ARTCC	White Sands Missile Range	USAF		
	TRUMAN C MOA, MO	FAA, KANSAS CITY ARTCC	Whiteman AFB	USAF	608	
	TRUMAN B MOA, MO	FAA, KANSAS CITY ARTCC	Whiteman AFB	USAF	730	
	TRUMAN A MOA, MO	FAA, KANSAS CITY ARTCC	Whiteman AFB	USAF	1108	
	R2309	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	USAF	62	
	R8501A	FAA, BURLINGTON APP		USAF	8	
	R8501B	FAA, BURLINGTON APP		USAF	8	
	R2206	FAA, ANCHORAGE ARTCC		USAF	10	
	R2502E	FAA, HI-DESERT TRACON, EDWARDS AFB		USAF	180	
	R4808S	FAA, LOS ANGELES ARTCC		USDOE	24	
	R4809	FAA, LOS ANGELES ARTCC		USDOE	392	
	R4808N	FAA, LOS ANGELES ARTCC		USDOE	1279	
	R2531	FAA, OAKLAND ARTCC		USDOE	4	
	R4403	FAA, HOUSTON ARTCC		NASA	4	
	R2903C	FAA, JACKSONVILLE TRACON	Dept. of Military Affairs (FL)	NASA	11	
	R5502A	FAA, CLEVELAND ARTCC		NASA	20	
	R5101	FAA, ALBUQUERQUE ARTCC	Energy, Research, and Development Agency	NASA	22	
	R2903D	FAA, JACKSONVILLE TRACON	Dept. of Military Affairs (FL)	NASA	23	
	R2904A	FAA, JACKSONVILLE TRACON	Dept. of Military Affairs (FL)	NASA	28	
	R5502B	FAA, CLEVELAND ARTCC		NASA	48	
	R2903A	FAA, JACKSONVILLE ARTCC	Dept. of Military Affairs (FL)	NASA	68	
	R4401A	FAA, HOUSTON ARTCC		NASA	87	
	R4401B	FAA, HOUSTON ARTCC		NASA	87	
	V4497A	FAA, MIAMI ARTCC	Dept. of Military Affairs (FL)	NASA	2424	
	V4497B	FAA, MIAMI ARTCC	Dept. of Military Affairs (FL)	NASA	21753	
	V4470F	FAA, JACKSONVILLE ARTCC	Dept. of Military Affairs (FL)	NASA		
	R2938	FAA, PALM BEACH ATCT		NASA		
	V5006	FAA, NEW YORK ARTCC	Dept. of Military Affairs (FL)	NASA		

* Users from various units, installations, and Services share special Use Airspace (SUA). For this report, a simple one-to-one listing of airspace to installations does not show the full picture of airspace usage. As a general rule, this inventory lists units of SUA to the installation responsible for scheduling their use. A full discussion of the management of SUA is beyond the scope of this report. Readers should therefore interpret the SUA information in this inventory with appropriate caution. Subsequent Section 366 and 320 reports will include a fuller discussion of SUA.

Source: Department of Defense based on data from the National Geo-Spatial Intelligence Agency.

Appendix F: Descriptions of Navy Range Complexes

Individual Ranges Not in a Complex

Most Navy ranges are grouped into geographical complexes. Those ranges not in a complex are the Brownwood military operating areas (MOAs) in Central Texas and the Major Range and Test Facility Base (MRTFB) ranges.

Navy MRTFB Ranges

The Navy MRTFB consists of T&E facilities, including ranges. The MRTFB ranges supplement Navy-training needs in multiple areas in concert with their primary mission of acquisition support. The MRTFB Ranges serve a primary mission of acquisition support. They supplement Navy-training needs in multiple areas.

NAVAIR Atlantic Test Range

The Naval Air Systems Command (NAVAIR) Naval Air Warfare Center Aircraft Division Atlantic Test Range consists of the Naval Air Station (NAS) Patuxent River, RDT&E range airspaces and instrumentation, and flight and ground test facilities. The ranges consist of land, seaspace, and airspace along the Chesapeake Bay and in the offshore areas extending into the Atlantic Ocean.

NAVAIR Point Mugu Sea Range

The NAVAIR Point Mugu Sea Range provides highly instrumented air and sea space. Once focused on air weapons T&E, Point Mugu also provides critical support for IDRC, joint Service activities, multinational training, and experimentation exercises. As an MRTFB, Point Mugu has extensive range infrastructure and a large, highly qualified technical workforce. Investments made in interconnectivity, in addition to proximity to naval forces and other ranges, are vital to Point Mugu, which often networks with other ranges during live and virtual exercises.

NAVAIR China Lake Ranges

Fully instrumented and providing a wide range of targets and supersonic flight corridors, the China Lake Ranges support T&E for both air and ground testing of conventional weapons and aircraft systems. The ranges are located in R-2508 and include numerous land ranges, Military Operating Areas (MOAs), and SUAs.

Atlantic Underwater Test and Evaluation Center

The Atlantic Undersea Test and Evaluation Center (AUTEK) is a comprehensive shallow and deep-water weapons testing and research complex located in the Bahamas. The AUTEK facilities provide training, antisubmarine warfare assessment, and operational readiness testing for U.S. and Allied Naval forces. Access to the AUTEK range is geographically restricted by its remote nature. Its restricted access provides sanctuary from most commercial and private encroachment, providing unmatched operational security.

Range Complexes: Capabilities and Capacities

The Navy defines range capabilities in terms of the ability to support training to the Naval Warfare Mission Areas and range capacity as the ability to support the three levels of the IDRC.

Hawaiian Islands

The Hawaiian Islands complex consists of six land and water ranges, six SUAs, five air and surface OPAREAs, and three range-related facilities, encompassing 220,051 sq nm; supports all three IDRC phases and eight Navy warfare areas; and is significant especially due to its proximity to western Pacific deployment areas. In Fiscal Year (FY) 2000, 1,048 operations were conducted using 69,577 rounds of ordnance. Hawaiian Islands supports the Third Fleet Rim of the Pacific Exercise, Surface Group Middle Pacific and Destroyer Squadron 31, Patrol and Reconnaissance Force Pacific, Submarine Squadrons 1, 3, and 7, and foreign and non-Navy users.

Whidbey Island

NAS Whidbey Island manages nine offshore and inland areas and ranges encompassing 136,260 sq nm. In FY-2000, the Pacific Fleet conducted 360 operations in the complex. Naval Weapons Systems Training Facility Boardman located here is a multi-target range. While the Boardman MOA is currently used for refueling activities and for simulating weapons delivery tactics, as munitions delivery has not been authorized since 1996. Whidbey Island supports training for two phases of the IDRC and four Navy Warfare Areas. The complex supports the Electronic Attack Wing Pacific, Patrol and Reconnaissance Wing Ten, and two non-Navy users.

San Francisco

This increasingly used complex consists of four SUAs and one OPAREA, encompassing 15,902 sq nm of airspace controlled by the FACSFAC NAS San Diego. A continuing challenge is coexistence with the growing civil air traffic near San Francisco. Naval SUAs here support the full spectrum of Navy training. San Francisco supports all IDRC phases, five Navy Warfare Areas, and Strike Fighter Wing Pacific, and non-Navy users.

Fallon

The Fallon Range Training Complex (FRTC) is the home of the Naval Strike and Air Warfare Center, the Navy's premier aviation training center and has SUA enclosed within an MOA that overlays 6.5 million acres. FRTC consists of nine ranges and seventeen airspaces and OPAREAs, encompassing 12,390 sq nm. Essential to Navy readiness, FRTC is the focal point for all Navy, and some Marine Corps, graduate-level aviation strike warfare training. The complex offers a unique configuration of land, airspace, targets, and instrumentation that allows for levels of combat training not available elsewhere. In FY-2000, 67,709 operations were conducted using an average of 591,732 rounds of ordnance per year. Operations include conventional air-to-ground operations, strikes against integrated air defenses, supersonic and AAW air operations, Combat Search and Rescue (CSAR), and special operations advanced land warfare missions. Fallon supports training in all phases of IDRC and four Navy Warfare Areas.

The complex supports eleven carrier strike groups, nine carrier air wings, Naval Special Warfare Groups One and Two, and non-Navy users.

Southern California (SOCAL)

The SOCAL complex consists of seven land and water ranges, fifteen SUAs and OPAREAs, and three range-related facilities, encompassing 119,590 sq nm. The SOCAL complex supports one of the largest concentrations of naval forces in the world. With some of the Navy's most heavily used air and sea OPAREAs, SOCAL is comprised of three major components: the San Clemente Island Range Complex (SCIRC), Naval Amphibious Base (NAB) Coronado training areas, and offshore OPAREAs and airspace.

The SCIRC is the cornerstone of the tactical training ranges supporting SOCAL. SCIRC provides land, air, and sea ranges for readiness training and T&E activities. SCIRC's distance from the mainland, varied topography, shallow water, expansive ranges, and complete Navy ownership make it ideal for military operations training and weapons T&E. NAB Coronado is the single site, worldwide, for several Special Warfare training areas. NAB Coronado has been the home to Navy Underwater Demolition Teams and SEAL teams since their inception in World War II. For decades, amphibious landings have been conducted off the Coronado Silver Strand Beach.

In FY-2001, 3,747 operations were conducted at SOCAL using 643,929 rounds of ordnance. The complex supports all Navy Warfare Areas, IDRC phases, and levels of naval special warfare training. San Diego area-based personnel conduct most of their basic training at SOCAL. SOCAL supports the Third Fleet, including five aircraft-carrier strike groups, three surface-ship groups, three air groups, three amphibious warfare groups, three submarine groups, Naval Special Warfare Group One, and two non-Navy users.

El Centro

The El Centro complex has one land range and one SUA, including three areas, an inland MOA, an ATCAA, and parachute drop zones, encompassing 1,230 sq nm. Considered part of the SOCAL complex, the Naval Air Facility El Centro provides realistic training to aviation units in air combat training, carrier flight operations, and weapons delivery. NAF El Centro is not limited by factors of variable climatic conditions and surrounding population as other facilities with similar missions are. Flight operations exceeded 167,000 in 1999, and 1,600 personnel, including special operations forces and foreign units, train here monthly. El Centro's four targets were used in FY-2000 in 11,660 operations with 163,798 total rounds of ordnance expended. El Centro supports two Navy Warfare Areas, five aircraft-carrier strike groups, six aviation wings and squadrons, and non-Navy users.

Boston Area

Boston has five non-instrumented warning areas and OPAREAs, encompassing 14,090 sq nm. The Boston OPAREA is used for surface-to-air gunnery, ASW tactics, and surface/subsurface operations. The Small Point Mining Range supports aircraft-mine-laying exercises using inert

ordnance. Boston can support aircraft MINEX; and air-to-air, surface-to-surface, and surface-to-air GUNEX. Boston supports training in the Basic Phase of IDRC and five Navy Warfare Areas. Boston supports the Second Fleet, Patrol and Reconnaissance Wing 11, Submarine Group Two with two submarine squadrons, Submarine Development Squadron 12, and foreign users.

Virginia Capes (VACAPES)

A designated air-traffic control facility, the VACAPES complex consists of ten targets and instrumented areas, six SUAs and surface OPAREAs, and four range-related facilities, encompassing 107 sq nm of land, 30,563 sq nm of airspace, and 28,923 sq nm of OPAREAs. VACAPES is one of the foremost complexes in which Atlantic Fleet battle groups train as part of the IDRC. In FY-2001, 10,040 Navy operations were conducted at VACAPES using 80,612 rounds of ordnance. Units based at Norfolk and Oceana conduct the majority of their Basic phase training of the IDRC at VACAPES. Used in every phase of the IDRC, the complex also supports all Navy Warfare Areas. VACAPES supports the Second Fleet, five aircraft-carrier strike groups, five surface groups, three amphibious warfare groups, eight aviation wings, two submarine squadrons, and non-Navy users.

Atlantic City

Atlantic City is composed of one non-instrumented warning area and one OPAREA, encompassing 5,800 sq nm. Major training operations conducted here are surface and surface-to-air exercises, including GUNEX and MISSILEX. The complex supports Basic and Advanced training phases of the IDRC and two Navy Warfare Areas. No Navy forces are supported on a regular basis, but the complex does support non-Navy users.

Narragansett

Narragansett is composed of two non-instrumented warning areas and one OPAREA, encompassing 27,330 sq nm. Major training operations conducted here can include: surface-to-air GUNEX, ASW exercises, air intercepts, and flight testing. The complex supports Basic and Intermediate training phases of the IDRC and two Navy Warfare Areas. Narragansett Bay supports Patrol and Reconnaissance Wing 11 and four submarine squadrons.

Cherry Point

The Navy's portion of the contribution to the Cherry Point range complex is the Cherry Point Operating Area (CPOA) and the W-122, encompassing 18,390 sq nm. The CPOA and W-122, under the control of FASCFAC VACAPES, provide seaspace and airspace for Navy, Marine Corps, other Service, and Allied surface, submarine, and air forces. The CPOA/W-122 supports all phases of the IDRC, but the majority of activity is Intermediate and Advanced training for carrier and expeditionary strike groups and Marine Expeditionary Units. CPOA/W-122 support four LANTFLT carrier air wings, four AIRLANT aircraft type-wings, Naval Special Warfare (NSW) Development Group, NSW Group Two, Amphibious Group Two, four amphibious squadrons, Naval Beach Group Two, five destroyer squadrons, and non-Navy users.

Jacksonville and Charleston

The Jacksonville complex consists of land and water ranges, SUA, and surface operating areas, including six instrumented ranges and twelve non-instrumented warning areas, an MOA, and an OPAREA, encompassing 40,580 sq nm. The Charleston complex consists of SUA and surface operating areas (three warning areas and one OPAREA), encompassing 18,360 sq nm. The Townsend Range near Savannah, GA and three overland ranges located near Jacksonville are also managed in this complex. These ranges offer excellent training, although long-term restrictions and the rapid growth of commercial air traffic adjacent to and over the ranges' associated SUA limit their utility. Airspace control centers and civil users in the area have cooperated to open inactive SUA to civil training operators with success. Following closure of NAS Cecil Field, and given the difficulty in hosting fighter/attack deployments at NAS Jacksonville, much of the ranges' use has come from carrier-launched strikes. The Charleston OPAREA supports surface and subsurface exercises. In FY-2001, 6,636 operations were conducted on five Jacksonville ranges, using 3,277 rounds of ordnance. Used for training in three IDRC phases, Jacksonville also supports seven Navy Warfare Areas. Charleston supports all phases of the IDRC and five Navy Warfare Areas. Jacksonville supports an aircraft-carrier strike group, three cruiser-destroyer groups, five aviation wings, and non-Navy users. Charleston supports transiting units of both SURFLANT and AIRLANT.

Key West

NAS Key West continues to provide the East Coast's finest air-to-air training venue. It consists of one OPAREA, one range, and four well-instrumented airspaces encompassing 25,190 sq nm. Extensive warning areas extend north, south, and west of the installation, operating with some constraints due to the proximity of the Dry Tortugas/Fort Jefferson National Monument. The airspace is available and usable. In FY-2001 Key West TACTS' usage included 7,075 operations. The complex is used for various surface and subsurface operations and air-to-surface BOMBEX, air-to-air GUNEX, and instrument training. Used in all IDRC phases, Key West supports three Navy Warfare Areas, a fighter wing, a strike fighter wing, and non-Navy users.

Gulf of Mexico (GOMEX)

The GOMEX complex includes one target/instrumented area and five non-instrumented warning areas and OPAREAs, encompassing 19,640 sq nm. The complex is used primarily for student pilot and navigator training as well as Mine Warfare training. The training operations conducted in GOMEX include airborne BOMBEX; surface-to-surface, surface-to-air, air-to-air, and air-to-surface GUNEX; ASW exercises; and MINEX. The complex supports all IDRC phases, four Navy Warfare Areas, three Mine Warfare Command units, the Naval Air Training Command, and non-Navy users. GOMEX will begin supporting Carrier Strike Group and Expeditionary Strike Groups in FY 2004 as forces begin to conduct exercises under the Training Resource Strategy.

Meridian

The Meridian Complex airspace consists of a land range (target area) and an MOA, encompassing 4,650 sq nm, primarily used for student naval pilot training and bomb/strafe ordnance deliveries. Meridian's responsibilities and pace of operations increased with the 1993 closure of NAS Chase Field. The Navy and FAA jointly manage the airspace. In FY-2001, Meridian hosted 11,660 operations that used 163,798 rounds of ordnance. The complex supports Basic phase training of the IDRC and two Navy Warfare Areas. Operations conducted include AAW, aerobatics, and air-to-ground BOMBEX. Forces supported include the Naval Air Training Command.

Okinawa

The Okinawa Area consists of a land range, SUA, and a range-related facility. The complex includes three target/instrumented areas, and eleven range areas, MOA, ATCAA, and parachute drop zones encompassing 19,580 sq nm. The training operations conducted in the Okinawa Area complex include: surface-to-surface, surface-to-air, air-to-surface, and air-to-air; embarkation training; amphibious training; demolition training; artillery and small arms training; infantry maneuvers; counter-guerrilla training; and airborne training. The complex supports all three training phases of the IDRC and five Navy Warfare Areas. Okinawa supports the Seventh Fleet, one amphibious warfare group, Naval Special Warfare, EOD Mobile Unit 5, and non-Navy users.

Japan

The Japan complex consists of three target areas, nine non-instrumented areas, and one range-related facility, encompassing 12,300 sq nm. It supports training of ships and aircrews of the forward deployed Naval forces (FDM) based in Japan. Exercises conducted include inert conventional air-to-ground, surface-to-surface, surface-to-air, and air-to-air GUNEX and AAW, submarine, and ASW exercises. The complex supports Basic, Intermediate, and Advanced training for six Navy Warfare Areas. Forces supported include the Seventh Fleet, three aviation wings, one aircraft-carrier strike group, one destroyer squadron, two amphibious warfare groups/squadrons, one submarine squadron, and non-Navy users.

Marianas

The Marianas complex consists of one range and one warning area encompassing 8,730 sq nm. Targets include multiple ground targets on Farallon de Medinilla (FDM). Guam is home to numerous U.S. Navy commands supporting the FDM of the Pacific Fleet. In FY-2000, Marianas' usage included 552 operations conducted by the Pacific Fleet (on FDM), and 17,603 rounds of ordnance. The training operations conducted in the Marianas complex include Naval Gunfire Support and air-to-ground exercises using conventional ordnance. The complex supports all three phases of IDRC and five Navy Warfare Areas. Marianas supports the Seventh Fleet, one aircraft-carrier strike group, one aviation wing, DESRON 15, one amphibious warfare group, one submarine squadron, and non-Navy users.

Diego Garcia

Used by the Navy and Air Force jointly, the Diego Garcia complex consists of one land range and six warning areas encompassing 28,530 sq nm, primarily designated for use during carrier battle group exercises. It provides Basic and Intermediate training for the IDRC and supports two Navy Warfare Areas, offering training operations in surface-to-surface, surface-to-air, and air-to-surface GUNEX; surface-to-surface and air-to-surface MISSILEX; Search and Rescue exercises; and aerial MINEX. The complex supports Patrol and Reconnaissance Force (deployment site) and transiting aircraft-carrier strike groups.

Appendix G: Army Range Facility Descriptions

1. Purpose. Below can be found written descriptions of ranges and Facility Category Codes as found in DA Pamphlet 415-28 as well as a description of the Future Force Unit of Action/Joint Future Ranges.

2. Maneuver/Training/Impact Area Descriptions. The specific types of maneuver/training areas are:

17710 Maneuver/Training Area, Light Forces. Space for ground and air combat forces to practice movement and tactics as specified in the unit's Army Training and Evaluation Program (ARTEP). Included in these areas are bivouac sites, base camps and other miscellaneous training areas. These are areas where maneuver may be restricted for some reason to only small units or units having only wheeled vehicles. Light maneuver/training areas are not typically used by heavy forces other than assembly areas where movement is restricted to roads and trails.

17711 Maneuver/Training Area, Amphibious Forces. Space for ground and air combat forces to practice movements and tactics during amphibious (ship-to-shore). Tasks can include both combat and logistics (especially logistics over the shore, or LOTS).

17720 Maneuver/Training Area, Heavy Forces. Space for ground and air combat forces to practice movement and tactics as specified in the unit's Army Training and Evaluation Program (ARTEP). Included in these areas are bivouac sites, base camps and other miscellaneous training areas. These are areas where maneuver is unrestricted and can consist of all types of vehicles and equipment, including tracked vehicles. Heavy maneuver/training areas can be used by light forces.

17730 Impact Area, Dudded. An area having designated boundaries within which all dud-producing ordnance will detonate or impacts. Impact areas contain unexploded ordnance and may not be used for maneuver.

17731 Impact Area, Non-Dudded. An area having designated boundaries within which ordnance which does not produce duds will impact. This area is composed mostly of the safety fans for small arms ranges. These impact areas may be used for maneuver, at the cost of curtailing use of weapons ranges.

17801 Basic 10-25m Firing Range (Zero)/110 FP. A range used for preparatory marksmanship training, to include zeroing and corrective instruction, on the M16 rifle, M249 SAW, M60 Machine Gun and M2 machine gun. Also used for machine gun traversing and searching training.

17802/03 Field Fire Range/32 FP. A (rifle) range used for firing at targets comparable to battlefield distances, developing speed in target engagement and individual soldier confidence.

17804/05 Record Fire Range/16 FP. A (rifle) range used for practice and qualification in engaging personnel targets in a simulated combat environment.

17806 Modified Record Fire Range/16 FP. A (rifle) range used to fire both field fire and record fire exercises.

17807/08 Night Fire (Small Arms) Range/35 FP. A range used to master night rifle fire engagement techniques and to complete qualification scores.

17809 Automated Qualification/Training Range (QTR). A fully modernized range used for firing at targets comparable to battlefield distances, to include pistol, rifle, machine gun and anti-tank weapons. The range may be used for automatic fire and squad/platoon tactical training.

17810 Known Distance Range/55 FP. A range used for practice, modified qualification and competition.

17811/12 Sniper Field Fire Range/4 FP. A range used for day and nighttime sniper training, as well as advanced rifle marksmanship training for selected soldiers.

17813 Automatic Rifle Range. A range used to teach soldiers the fundamentals of automatic M16 rifle and M249 SAW fire against point, linear and area targets.

17814 Non-Standard Small Arms Range. A range used to teach soldiers individual firing techniques and develop confidence. Includes all small arms ranges that do not fit into other categories.

17816 Bayonet Assault Course. A course consisting of an unimproved area of ground for training soldiers in attacking an enemy in close combat.

17821/22 Combat Pistol/MP Firearms Qualification Course/15 FP. A range used for instructional firing of pistols and sub-machine guns, combat pistol qualification and military police qualification with pistols, shotguns and sub-machine guns. This range is live-fire and may include a walk-through scenario or a static firing line.

17823. Sub-Machinegun Range. A range used for sub-machinegun familiarization firing.

17831 Machinegun Transition Range/20 FP. A range used along with the Basic 10-25m (Zero) Range to qualify gunners with the M60 and M2 machine guns and SAW. May include light vehicle and bunker targets.

17832 Machinegun Field Fire Range/20 FP. A range used to practice the fundamentals learned on the Basic 10-25m (Zero) Range and the Machinegun Transition Range. May depict likely enemy formations.

17833 Automated Multi-Purpose Machinegun Range/15 FP. An automated range used to qualify soldiers and crews on machineguns and the SAW.

17834 40mm (Grenade) Machinegun Qualification Range. A range used to conduct practice and qualification firing with the MK 19 weapon, both mounted and on the ground.

17841 Light Anti-Tank Weapons (LAW/AT-4) Range, Sub-caliber/8 FP. A range used to teach soldiers the skills needed to defeat armored vehicles with recoilless rifles or light anti-tank weapons using launch effects trainers, sub-caliber rockets or small arms cartridges.

17842 Light Anti-Tank Weapons (LAW/AT-4) Range, Live/8 FP. A range used to teach soldiers the skills needed to defeat armored vehicles with recoilless rifles or light anti-tank weapons using live rockets, launch effects trainers, sub-caliber rockets or small arms cartridges.

17843 Recoilless Rifle Range/8 FP. A range used to teach soldiers skills needed to defeat armored targets with the recoilless rifle.

17844/45 Anti-Armor Tracking and Live Fire Range/ 20 FP. A range used to teach soldiers the techniques of engaging targets with medium and heavy anti-armor weapons and missiles. It is also used for field tracking and qualification exercises with tracking and launch effect trainers.

17851 Mortar Scaled Range. A range used by 60mm, 81mm, 107mm and 120mm mortar crews for training using the M32 pneumatic device.

17852 Mortar Range. A range used by mortar crews and forward observers to maintain technical proficiency in mortar firing.

17854 Field Artillery Scaled Range. A scaled range used to teach firing skills to the entire field artillery team. It uses the M31 trainer.

17855 Field Artillery Direct Fire Range. A range to fire cannon artillery weapons systems using high- explosive ammunition, where the crew can see the target and fires as point-to-point weapon.

17856 Field Artillery Indirect Fire Range. A range to fire cannon artillery and Paladin weapon systems using high-explosive ammunition, where the crew cannot see the target. Includes a flexible selection of firing points.

17857 Multiple Launch Rocket System (MLRS) Range. A range that can include the firing point for the MLRS live fire, and can be used for cannon artillery weapons systems. The crew cannot see the target.

17861 Tank/Fighting Vehicle Scaled Gunnery Range (1:30 and 1:60)/4 FP. A range used to zero Bradley Fighting Vehicle (BFV) weapons and fire BFV Tables I-III. It is used primarily with the M55 laser Gunnery device, and to fire the .22 caliber or 5.56 ammunition.

17862 Tank/Fighting Vehicle Scaled Gunnery Range (1:5 and 1:10)/4 FP. A range used a facility to exercise all BFV fire control systems, and can be used for sub-caliber exercises.

17863 Tank/Fighting Vehicle Stationary Gunnery Range/14 FP. A range to train tank and fighting vehicle crews during day and night exercises. Calibration, screening, Table IV and sub-caliber exercises are fired on this range.

17864/65 Multipurpose Training Range (MPTR). A large range of one or two lanes specifically designed to satisfy mechanized infantry and armor unit gunnery training requirements for Tables VII and VIII. All firing is from moving vehicles at stationary and moving targets in a tactical array.

17866 Tank/Fighting Vehicle Platoon Battle Run (Table XI and XII)/4 LANES. A range that incorporates tank and fighting vehicle exercises with mechanized platoon tactical maneuver training. This range can be used for CALFEX and weapons capability exercises, and was used for Tables XI and XII before standardization of the Multipurpose Range Complex (MPRC).

17867 Multipurpose Range Complex, Light (MPRC-L)/4 LANES. A large standardized range designed to satisfy training requirements for light infantry units, yet still satisfy mobilization requirements of mechanized and armor units up to Table XII. It is usually constructed with 4 lanes and fully automated stationary and moving targets, and is scenario driven.

17868 Multipurpose Range Complex, Heavy (MPRC-H)/4 LANES. A large standardized range specifically designed to satisfy training requirements for mechanized infantry and armor units up to Table XII. It is usually constructed with 4 lanes and fully automated stationary and moving targets, and is scenario driven. All operations are from moving vehicles. Can be used for dry-firing and sub-caliber engagements.

17869 Combat Engineer Vehicle (CEV) Range. A range used to teach and qualify CEV crews on the skills needed to destroy stationary and moving targets during day and night exercises.

17871 Air Defense Gunnery Range. A range used to support Vulcan ADA gunnery training and small arms air defense training by rifle platoons, tank platoons and other forward-area units.

17872 Air Defense Missile Firing Range. A range for live firing of ADA weapons missile systems.

17881 Hand Grenade Accuracy Course (Non-Firing). A course used to develop grenade throwing proficiency and is limited to practice grenades.

17882 Hand Grenade Qualification Course (Non-Firing)/6 FP. A course used to teach tactical employment of hand grenades and provide a qualification rating. Limited to practice grenades.

17883 Hand Grenade Familiarization Range (Live)/4 FP. A range used to familiarize soldiers with effects of live grenades, and to provide experience and confidence in handling live grenades.

17884 Grenade Launcher Range/4 FP. A range used to teach grenade launcher firing techniques and qualify grenadiers with the M203 and M79 grenade launchers.

17885 Light Demolition Range. An area used to train soldiers in handling explosives and pyrotechnics, and not intended for use by EOD personnel and the disposal of explosive ordnance. Has firing pits.

17886 Heavy Demolition Range. A cleared area used for demolition of explosives by EOD or RDT&E personnel. Has firing pits and may have a bunker with viewing screen.

17887 Flame Operations Range. A range used to teach soldiers the techniques of firing flash weapons and flame throwers at point and area targets.

17888/89 Engineer Qualification Range (EQR). A range used to qualify engineer soldiers and units on tasks such as sapper, mine warfare, light demolition and engineer weapon firing.

17891 Infiltration Course/2 LANES. A course for soldiers to practice moving barbed wire and log obstacles with a machine gun firing (or non-firing) overhead.

17892 Fire and Movement Range. A range used to teach soldiers individual and team movement and maneuver techniques while engaging targets with an M16 rifle.

17893 Squad Defense Range/5 FP. A range used to train soldiers to employ mutually supporting fires from defensive positions against attacking troops.

17894/95 Infantry Squad Battle Course. A course that provides live-fire training for infantry squads using all organic weapons in offensive and defensive scenarios.

17896/97 Infantry Platoon Battle Course. A range used by an infantry platoon to practice movement-to-contact operations and hasty attach operations using all organic weapons.

17898 Military Operations in Urban Terrain (MOUT) Assault Course (MAC). A facility used for individual and low-level collective training on specific MOUT tasks before training on more complicated MOUT sites. Will support live-fire or MILES exercises.

17908 Target Detection Range (Non-Firing)/50 FP. A non-firing range used to teach soldiers how to detect personnel on the battlefield under various conditions.

17911/12 Aerial Gunnery Range/8 LANES. A range for individual, crew and unit attack helicopter gunnery exercises. Will support firing of machineguns, grenade launchers, cannons, rockets and missiles.

17913 Close Air Support Range. A range used by all services for the command, control and target attack of close air support aircraft and fixed wing gunships.

17914 Aerial Bombing Range. A range used by all services for the command, control and target attack of aircraft on land targets, not limited to close air support aircraft and fixed wing gunships.

17995 Combat in Cities Facility. A non-standard facility used to train and sustain unit proficiency in an urban environment, possibly for law enforcement and riot control scenarios.

17996 MOUT Collective Training Facility (Small). This standard design complex (not more than 24 buildings) provides scenario driven urban warfare task training for small units (squad/platoon). Devices that replicate weapons effects or personnel casualties are used.

17997 MOUT Collective Training Facility (Large). This standard design complex (more than 24 buildings) provides scenario driven urban warfare task training for small units (company/battalion task force). Devices that replicate weapons effects or personnel casualties are used.

17998 Land Navigation Course. An area used for mounted and dismounted map reading, terrain association or navigational training.

17999 Field Training Area. A smaller area used for training personnel or animals (ex. K-9) in a field environment. May include communication and medical training.

4. Testing Ranges. These are facilities for research, development and testing of arms, ammunition, avionics and production equipment. They are generally located only at Army Testing and Evaluation Command (ATEC) installations.

FCC Description/Standard Size.

39069 RDT&E Range. A range used for research, development and testing operations.

39075 RDT&E Impact Area. An area in which all ordnance will detonate or impact. This area is limited to RDT&E activities.

39076 RDT&E Drop Zone. An area limited to RDT&E activities involving research, development, testing and evaluation of airdrop capabilities.

5. Stryker Brigade Combat Team (SBCT) Ranges. Individuals, crews and units in a SBCT will train on selected ranges described in paragraph 2. These are:

17720	Maneuver/Training Area, Heavy Forces
17730	Impact Area, Dudded
17731	Impact Area, Non-Dudded
17801	Basic 10-25m Firing Range (Zero).
17806	Modified Record Fire Range.
17812	Sniper Field Fire Range.
17822	Combat Pistol/MP Firearms Qualification Course.
17833	Automated Multi-Purpose Machinegun Range.
17834	40mm (Grenade) Machinegun Qualification Range.
17845	Anti-Armor Tracking and Live Fire Range.
17852	Mortar Range.
17863	Tank/Fighting Vehicle Stationary Gunnery Range.
17865	Multipurpose Training Range (MPTR).
17882	Hand Grenade Qualification Course (Non-Firing).
17884	Grenade Launcher Range.

CAMTF MOUT Suite:

17901	Combined Arms Collective Training Facility
17902	Urban Assault Course
17903	Live-Fire Exercise Shoot House
17904	Live-Fire Exercise Breach Facility

Battle Area Course (BAX)

6. Future Force Unit of Action (UA) Joint Future Ranges (JFR). A recommended home-station range suite designed to achieve the near-term UA requirements consists of 23 ranges and 15 different ranges types. The range suite also includes maneuver space as well as a Home-Station Instrumented training System (HITS). These ranges will support a variety of Army Units and organizations: Future Force (FF), SBCT, Digital, and Legacy. The notional FF UA range suite consists of the following ranges:

a. Close Battle Qualification Complex (CBQC) Live-Fire. The CBQC supports individual and crew weapons skills training for all soldiers employing individual line-of-sight (LOS) weapons, Land Warrior and live grenade and pyrotechnics. It contains reconfigurable LOS dismounted weapons engagement areas and an (up to platoon level) urban assault course. Its estimated footprint is 10 x 12 km.

b. Individual Skills Training Complex (ISTC). This is a multi-purpose no-fire complex that supports individual skills (ex. land navigation, physical fitness, hand grenade non-firing qualification).

c. Armed Robotic Vehicle Flight Training Range (ARVFTR). This live-fire range allows the 18 UA's ARVs to be remotely operated and fired. ARVQR targetry

includes dismounts, fortified positions and buildings, and moving light armored vehicles.

d. Unmanned Aerial Vehicle (UAV) Flight Training Range (UAVFTR). At this time there are no UAV live-fire requirements. This range would enable the UAV operator to practice launch and recovery skills, and to operate the UAV over extended ranges in dedicated air corridors (above non-UAV training areas).

e. Demolition Breaching Range (DBR). This facility is used to train soldiers and squads on the skills necessary to employ breaching techniques against hardened structures and to create road craters.

f. LOS Crew Qualification Range (LCQR). The LCQR provides crew training for mobile hunter-killer teams using Mounted Combat Systems (MCS) and Infantry Carrier Vehicles (ICV) against dismounted targets, light stationary and mobile armor targets and reinforced concrete walls. Lethal and non-lethal munitions can be used. Its estimated footprint is 5 x 8 km.

g. LOS Crew/Dismount Qualification Range (LC/DQR). This range is similar to the LCQR but incorporates the ICV nine-man infantry squad in their dismount roles. The crew and dismounts engage stationary and moving targets and are certified in the integration of their tasks in the close battle. In addition to live-fire, sub-caliber and laser devices can be used.

h. Mounted LOS Urban Gunnery Range (MLUGR). This live-fire range contains a realistic urban environment with a variety of personnel, vehicle and reinforced targets – to include civilian and friendly components. The range design includes 6 course roads one kilometer apart. Its estimated footprint is 2.5 x 8 km.

i. Non-line of Sight (NLOS) Qualification Range (NQR). The NQR is the qualification range for NLOS Mortar, the NLOS Launch System and NLOS Cannon crews in their indirect short and extended range missions. The NLOS requires surveyed firing points and a dedicated impact area with hard targets. Its estimated footprint is 5 x 16 km.

j. Future Combat Systems (FCS) Collective Training Range (FCSCTR). This BLOS/LOS is used to train and test UA combined arms crews (ex. infantry, armor, aviation) and dismounted infantry platoons on collective tasks against stationary and mobile targets. It supports tactical free maneuver, live-fire and laser training. Its estimated footprint is 8 x 15 km.

k. Force Protection Range (FPR). The FPR allows Combat Support (CS) and Combat Service Support (CSS) units to conduct force protection training in a 360-degree live-fire environment against stationary infantry targets.

l. Mobility-Counter mobility Range (MCR). This range allows engineer and other units to train on mobility and counter mobility missions such as mine warfare, obstacles and barrier breaching and emplacement, demolitions and bridging.

m. Weapons of Mass Destruction Defense Training Range (WMDDTR). The WMDDTR provides a collective training facility for mounted/dismounted units to train skills and mission sets in a Chemical-Biological-Radiological-Nuclear environment. No live fire is required.

n. United States Air Force (USAF) Instrumented Range (USAF-IR). USAF-IR capability includes an impact area for limited bombing that achieves scoring. The primary USAF training missions on Army ranges include Close Air Support (CAS), Suppression of Enemy Air Defenses (SEAD), convoy escort, and Search and Rescue (SAR). The bombing runs, CAS, SEAD, convoy escort, and SAR activities would be integrated into a CALFEX. The USAF is responsible for any impact area instrumentation and would use their future Next Generation Range Instrumentation (NexRI) capability for interfacing with Army instrumentation.

o. Combined Arms Live Fire (CALFEX) Range. This is created by grouping a number of the previous 14 range types together. This will enable a company-sized unit to maneuver and employ organic and supporting weapons systems using full-service ammunition.

Appendix H: Marine Corps Range Capabilities

Marine Corps Ground/Air-to-Ground Range Complex Capabilities

Representative Range Capability	Range Complex							
	MCB Quantico	MCRD Parris Island	MCB Camp Lejeune	MCB Camp Pendleton	MCAGCC 29 Palms	MCB Hawaii	MWTC Bridgeport	MCB Camp Butler
Entry-Level Training								
OCS/TBS	X							
Recruit ¹ Training		X		X				
School of Infantry			X	X				
Other MOS/ Formal School	X		X	X	X	X	X	
Individual / Crew Skill Progression Training								
Small Arms Ranges—7.62mm and under	X	X	X	X	X	X		X
Small Arms Ranges—Heavy machine guns	X		X	X	X	X		X
Static Ranges—Ground launched missiles and rockets	X		X	X	X	X		X
Stationary Ranges—Armored Vehicle Gunnery	X		X	X	X			X
Explosive and Demolition Training	X		X	X	X	X		X
Hand Grenade Ranges	X		X	X	X			X
Engineer Training Area—Heavy equip.			X	X	X			X
Engineer Training Area—other	X		X	X	X	X	X	X
Collective Unit Training, MAGTF Element								
Fire and Maneuver—Infantry small unit	X		X	X	X	X		X
Fire and Maneuver—Infantry Co.			X	X	X			X
Maneuver Areas—Infantry Co.	X		X	X	X	X	X	X
MOUT—Infantry Co.	X		X	X				

¹ Recruit training is conducted at MCRD Parris Island on the East Coast, and at MCRD San Diego and Camp Pendleton on the West Coast. A portion of recruit training involves field and weapons training. Ranges and training areas at MCRD Parris Island support field and weapons training. MCRD San Diego does not have ranges; weapons and field training of West Coast recruits occurs at Camp Pendleton. Recruit training is varied and utilizes a unique combination of training resources in addition to ranges, and MCRD San Diego plays a vital role in the training continuum as a provider of such resources.

Representative Range Capability	Range Complex							
	MCB Quantico	MCRD Parris Island	MCB Camp Lejeune	MCB Camp Pendleton	MCAGCC 29 Palms	MCB Hawaii	MWTC Bridgeport	MCB Camp Butler
MOUT—Live Fire				X				
Armored Vehicle Crew Gunnery	X		X	X	X			
Armored Vehicle Unit Gunnery			X	X	X			
Maneuver Areas, Armored Vehicle	X		X	X	X			X
Artillery Firing Areas	X		X	X	X			
Maneuver area—Engineer and CSSE	X		X	X	X			X
Riverine OPAREA	X		X					
Aerial Bombing Range	X		X	X	X			
Air-to-Ground Gunnery Range	X		X	X	X			
MAGTF Training								
Amphibious landing—MEB			X	X				
Amphibious landing—MEU			X	X		X		X
Combined Arms fire and maneuver—MEB								
Combined arms fire and maneuver—MEU					X			
Maneuver Areas—RLT/ MEB								
Maneuver Areas—BLT/MEU			X	X	X		X	X
MOUT—MEB/RLT								
MOUT—MEU/BLT								
MAGTF MOUT, Live Fire								

Marine Corps Air Combat / Air-to-Ground Range Complex Capabilities

Representative Range Capability	Range Complex			
	Cherry Point Range Complex	MCAS Yuma/YTRC	MCAS Beaufort	Townsend Range
Air-to-Air Combat Range	X	X	X	
Aerial Bombing Range	X	X		X
Air-to-Ground Gunnery Range	X	X		X
Air-to-Ground Gunnery Range—MOUT		X		
Small Arms Ranges	X	X		
Explosives and Demolition Training Range	X	X		

Marine Corps Installations: Small Arms / EOD Ranges Only

Representative Range Capability	Installation			
	MCAS Miramar	MCAS Iwakuni	MCLB Albany	MCLB Barstow
Small Arms Ranges	X	X	X	X
Explosives and Demolition Training Ranges	X	X		

Appendix I: Air Force Range Complex Capacities and Capabilities

Name of Range	Number of Aircraft that Can Use Range of Airspace Simultaneously				Simultaneous or Sequential Use		Number of Aircraft that Can Use Communications Infrastructure Simultaneously				Simultaneous or Sequential Use	
	Four Aircraft or Less	More than Four Aircraft	Force Package	Large Force	Sequential Usage	Simultaneous Usage	Four Aircraft or Less	More than Four Aircraft	Force Package	Large Force	Sequential Usage	Simultaneous Usage
Avon Park	-	-	-	X	-	X	-	-	-	X	-	X
Belle Fourche ESS	-	-	-	X	X	-	-	-	X	-	X	-
Dare County Ranges	-	X	-	-	X	-	-	X	-	-	X	-
Grand Bay	X	-	-	-	X	-	X	-	-	-	X	-
Holloman Ranges	-	-	-	X	-	X	-	-	-	X	-	X
Melrose	-	-	-	X	-	X	-	-	-	X	-	X
Mountain Home Ranges	-	-	-	X	-	X	-	-	-	X	-	X
Nevada Testing and Training Range	-	-	-	X	-	X	-	-	-	X	-	X
Lone Star ESS	X	-	-	-	-	X	X	-	-	-	X	-
Poinsett	X	-	-	-	-	X	X	-	-	-	X	-
Snyder ESS	X	-	-	-	-	X	X	-	-	-	-	X
Utah Testing and Training Ranges	-	-	-	X	-	X	-	-	-	X	-	X
Barry M. Goldwater Ranges	-	-	-	X	-	X	-	-	-	X	-	X
Edwards Range	-	-	-	X	-	X	-	-	-	X	-	X
Eglin Ranges	-	-	-	X	-	X	-	-	-	X	-	X
Claiborne	X	-	-	-	X	-	X	-	-	-	X	-
Falcon	X	-	-	-	X	-	-	-	-	X	-	X
Shoal Creek	-	-	-	-	-	-	-	-	-	-	-	-
Adirondack	-	-	-	X	-	X	-	-	-	X	-	X
Airburst	-	-	X	-	-	X	-	-	X	-	-	X
Atterbury	-	X	-	-	-	X	-	X	-	-	-	X
Bollen	-	X	-	-	-	X	-	X	-	-	-	X
Cannon	-	X	-	-	-	X	-	X	-	-	-	X
Grayling	-	X	-	-	X	X	-	-	-	X	X	-
Hardwood	-	-	-	X	-	X	-	-	-	X	-	X
Jefferson	-	X	-	-	-	X	-	X	-	-	-	X
McMullen	-	-	X	-	X	-	-	X	-	-	X	-

**Table G-1
Capacities of USAF Ranges in the United States**

Name of Range	Number of Aircraft that Can Use Range of Airspace Simultaneously				Simultaneous or Sequential Usage		Number of Aircraft that Can Use Communications Infrastructure Simultaneously				Simultaneous or Sequential Usage	
	Four Aircraft or Less	More than Four Aircraft	Force Package	Large Force	Sequential Usage	Simultaneous Usage	Four Aircraft or Less	More than Four Aircraft	Force Package	Large Force	Sequential Usage	Simultaneous Usage
Razorback	.	.	.	X	.	X	.	.	.	X	.	X
Shelby	.	.	.	X	.	X	.	.	.	X	.	X
Smoky Hill	.	.	.	X	.	X	.	.	.	X	.	X
Townsend	.	.	.	X	.	X	.	.	.	X	.	X
Warren Grove	.	.	.	X	.	X	.	.	.	X	.	X
Blair Lake	X	.	.	.	X	X	.
Oklahoma	.	.	X	.	X	.	.	X	.	.	X	.
Yukon	.	.	.	X	.	X	.	.	.	X	.	X

Table G-2
Capabilities of USAF Ranges in the United States

Name of Range	Air Force Aircraft Range Supported by	Live Ordnance	Training Ordnance	Inert Ordnance	Laser Guided Bomb Use	State	Chaff Use	Flare use	Emitters	IADS	Sensors	Supersonic	Other (See Notes)
Avon Park	A-10, OA-10, F-16BLK 25/32	●	●	●	●	●	●	●	●	●	●	●	○
Belle Fourche ESS	B-1B, B-52H	○	○	○	○	○	○	○	○	○	○	○	○
Dare County Ranges	F-15E, A-10, OA-10	○	○	○	○	○	○	○	○	○	○	○	○
Grand Bay	B-1B, F-16BLK 40	●	●	●	●	●	●	●	●	●	●	●	○
Holloman Ranges	F-16BLK40, F-117	○	○	○	○	○	○	○	○	○	○	○	○
Melrose	F-16BLK 30/40, B-1B	○	○	○	○	○	○	○	○	○	○	○	○
Mountain Home Ranges	A-10, OA-10, F-16BLK30/52, F-15C/D/E, B-1B	○	○	○	○	○	○	○	○	○	○	○	○
Nevada Testing and Training Range	A-10/OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117	●	●	●	●	●	●	●	●	●	●	●	○
Lone Star ESS	B-1B, B-52H	○	○	○	○	○	○	○	○	○	○	○	○
Poinsett	F-16BLK50/52	○	○	○	○	○	○	○	○	○	○	○	○
Snyder ESS	B-1B, B-52H	○	○	○	○	○	○	○	○	○	○	○	○
Utah Testing and Training Ranges	A-10, OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117	●	●	●	●	●	●	●	●	●	●	●	○
Barry M. Goldwater Ranges	A-10, OA-10, F-16 ALL BLKS	●	●	●	●	●	●	●	●	●	●	●	○
Edwards Range	A-10, OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117, plus aircraft and weapons in testing	●	●	●	●	●	●	●	●	●	●	●	○
Eglin Ranges	A-10, OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117, plus aircraft and weapons in testing	●	●	●	●	●	●	●	●	●	●	●	○
Cleburne	A-10, OA-10, B-52H	○	○	○	○	○	○	○	○	○	○	○	○
Falcon	F-16	○	○	○	○	○	○	○	○	○	○	○	○
Shoal Creek	-	○	○	○	○	○	○	○	○	○	○	○	○
Adirondack	A-10, OA-10, F-16BLK25/30	●	●	●	●	●	●	●	●	●	●	●	○
Airburst	A/OA-10, F-117, C-130, UH-60, MH60, MH-47, MH-6F-16BLK30/40	○	○	○	○	○	○	○	○	○	○	○	○ ¹¹
Atterbury	F-16BLK30/40	○	○	○	○	○	○	○	○	○	○	○	○ ¹³
Bollen	A-10, OA-10, F-16BLK15/25/30	○	○	○	○	○	○	○	○	○	○	○	○ ¹²

Table G-2
Capabilities of USAF Ranges in the United States

Name of Range	Air Force Aircraft Range Supported by	Live Ordnance	Training Ordnance	Inert Ordnance	Laser Guided Bomb Use	State	Chaff Use	Flare use	Emitters	IADS	Sensors	Supersonic	Other
Cannon	A-10, OA-10, F-16BLK25/30	○	●	●	● ¹⁴	●	○	●	●	●	●	○	● ¹⁵
Grayling	A-10, OA-10, F-16BLK25/30/42	●	●	●	●	●	●	●	○	○	●	○	● ¹⁶
Hardwood	A-10, OA-10, F-16BLK15/25/30	○	○	●	●	●	●	●	●	●	●	○	● ¹⁷
Jefferson	-	○	○	●	●	●	●	●	●	○	●	○	● ¹⁸
McMullen	F-16BLK15/25/30	○	○	●	○	●	●	●	●	○	●	○	● ¹⁹
Razorback	A-10, OA-10, F-16BLK15/25/30	○	○	●	●	●	●	●	●	○	●	○	● ²⁰
Shelby	A-10, OA-10, F-16BLK15/25/30	● ²¹	●	●	● ²²	●	○	●	●	○	●	○	● ²³
Smoky Hill	A-10, OA-10, F-16BLK15/25/30, B-1B, B-2, B-52, F-15E	○	●	● ²⁴	○	●	●	●	●	●	●	○	● ²⁵
Townsend	A-10, OA-10, F-16BLK15/25/30/40/50, F-15E, S-3, EA-6B, FFA-18, C-130, C-17, UH-60, HH-60, AH-64, CH-47, CH-53, E-8	○	●	●	●(LG TR)	●	●	○	○	●	●	○	● ²⁶
Warren Grove	A-10, OA-10, F-16BLK15/25/30	○	●	●	○	●	●	●	●	○	●	○	● ²⁷
Blair Lake	-	○	●	●	○	●	●	●	○	○	○	○	○
Oklahoma	-	●	●	●	●	●	●	●	●	●	●	○	● ²⁸
Yukon	A-10, OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117	●	●	●	●	●	●	●	●	●	●	●	● ²⁸

Key: ● = fully supported. ○ = partially supported, usually one subrange does not have capability. ○ = not supported.
ESS = electronic scoring site LGB = laser guided bomb. IADS = integrated air defense systems.

Table G-2
 Capabilities of USAF Ranges in the United States

Name of Range	Air Force Aircraft Range Supported by	Live Ordnance	Training Ordnance	Inert Ordnance	Laser Guided Bomb Use	Strafe	Chaff Use	Flare use	Emitters	IADS	Sensors	Supersonic	Other (See Notes)
<p>Notes:</p> <p>¹ Belle Fourche ESS has a drop scoring system.</p> <p>² Red Rio range only.</p> <p>³ Red Rio and Oscura ranges only.</p> <p>⁴ Strafe at Saylor Creek range only.</p> <p>⁴ Has Mini-Multiple Threat Emitter System (Mini-MUTES) and Multiple Threat Emitter Systems (MUTES).</p> <p>⁵ Mini-MUTES, MUTES, Seek Score.</p> <p>⁶ UTTR supports use of JDAM and cruise missiles.</p> <p>⁷ There are unmanned emitters present on BMGR, but these emitters are not used by USAF.</p> <p>⁸ Supports UAV, directed energy weapons, high-powered microwave.</p> <p>⁹ Night vision goggle use permitted.</p> <p>¹⁰ Some limited capability for use of live ordnance at Fort Carson ranges.</p> <p>¹¹ Night vision goggle use and use of laser marking systems permitted.</p> <p>¹² Night vision goggle use permitted. Airdrop capability available.</p> <p>¹³ Night vision goggle use permitted.</p>				<p>¹⁴ Limited laser guided bomb use capability at Cannon range.</p> <p>¹⁵ Night vision goggle use permitted. Cannon is a certified laser range.</p> <p>¹⁶ Night vision goggle use and use of laser marking systems permitted.</p> <p>¹⁷ Night vision goggle use permitted.</p> <p>¹⁸ Night vision goggle use permitted.</p> <p>¹⁹ Night vision goggle use permitted.</p> <p>²⁰ Night vision goggle use and use of laser markers permitted. Heated targets available.</p> <p>²¹ Live ordnance use at Shelby West range only.</p> <p>²² Laser guided bomb use at Shelby West range only.</p> <p>²³ Night vision goggle use permitted.</p> <p>²⁴ BDU-33, -38, -50, and -56, and MK-76 use permitted.</p> <p>²⁵ CAF/GFAC present. Night vision goggle use permitted</p> <p>²⁶ Night vision goggle use and use of laser marking systems permitted. Heated targets available.</p> <p>²⁷ Night vision goggle use and use of laser markers permitted.</p> <p>²⁸ Use of rockets and missiles permitted.</p>									

Table G-3
Capabilities of USAF Ranges in the United States

Name of Range	Air Force Aircraft Supported by Range	IR Targets	Radar Targets	Conventional Bomb Circles	Vertical Targets	Multiple Attack Axes	Tactical Arrays	Weapons Scoring	High Altitude Tactics	Laser Spot Scoring
Avon Park	A-10, OA-10, F-16BLK 25/32	4	4	4	4	●	66	●	●	●
Belle Fourche ESS	B-1B, B-52H	0	3	0	0	●	0	●	●	○
Dare County Ranges	F-15E, A-10, OA-10	4	4	1	2	●	31	●	●	○
Grand Bay	B-1B, F-16BLK 40	5	0	1	1	○	5	○	●	○
Holloman Ranges	F-16BLK40, F-117	9	84	5	10	●	101	●	●	●
Melrose	F-16BLK 30/40, B-1B	4	79	1	1	●	1	●	●	○
Mountain Home Ranges	A-10, OA-10, F-16BLK30/52, F-15CD/E, B-1B	13	6	2	3	●	5	●	●	●
Nevada Testing and Training Range	A-10/OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117	4	182	3	8	●	182	●	●	●
Lone Star ESS	B-1B, B-52H	0	5	0	0	●	0	●	●	○
Poinsett	F-16BLK50/52	5	1	5	1		3		●	○
Snyder ESS	B-1B, B-52H	-	-	-	-	-	-	-	-	-
Utah Testing and Training Ranges	A-10, OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117	10	300	2	20	●	5	●	●	●
Barry M. Goldwater Ranges	A-10, OA-10, F-16 ALL BLKS	0	8	4	2	●	21	●	●	○
Edwards Range	A-10, OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117, plus aircraft and weapons in testing	-	-	-	-	-	-	-	-	-
Eglin Ranges	A-10, OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117, plus aircraft and weapons in testing	-	-	-	-	-	-	-	-	-
Claiborne	A-10, OA-10, B-52H	1	1	4	1	●	10	●	●	○
Falcon	F-16	-	-	-	-	-	-	-	-	-
Shoal Creek	-	-	-	-	-	-	-	-	-	-
Adirondack	A-10, OA-10, F-16BLK25/30	2	0	3	0	●	4	●	●	●
Airburst	F-16BLK30/40	15	20	1	1	●	6	●	●	●
Atterbury	F-16BLK30/40	3	0	2	1	●	13	●	●	○
Bollen	A-10, OA-10, F-16BLK/25/30	1	20	1	19	●	22	●	○	○
Cannon	A-10, OA-10, F-16BLK25/30	9	10	1	3	●	25	●	●	○

Table G-3
Capabilities of USAF Ranges in the United States

Name of Range	Air Force Aircraft Supported by Range	IR Targets	Radar Targets	Conventional Bomb Circles	S	Multiple Attack	Tactical Arrays	Weapons Scoring	High Altitude CS	Laser Spot Scoring
Grayling	A-10, OA-10, F-16BLK25/30/42	5	0	1	0	●	6	●	●	●
Hardwood	A-10, OA-10, F-16BLK15/25/30	3	2	1	0	●	2	●	○	○
Jefferson	-	1	10	1	0	●	7	●	●	●
McMullen	F-16BLK15/25/30	0	3	1	0	●	2	●	○	○
Razorback	A-10, OA-10, F-16BLK15/25/30	20	20	1	0	●	1	●	○	○
Shelby	A-10, OA-10, F-16BLK15/25/30	0	5	1	0	●	2	●	○	○
Smoky Hill	A-10, OA-10, F-16BLK15/25/30, B-1B, B-2, B-52, F-15E	5	1	2	0	○	3	●	●	○
Townsend	A-10, OA-10, F-16BLK15/25/30/40/50, F-15E, S-3, EA-6B, F/FA-14, F/A-18, C-130, C-17, UH-60, HH-60, AH-64, CH-47, CH-53, E-8	3	2	1	2	●	3	●	○	●
Warren Grove	A-10, OA-10, F-16BLK15/25/30	2	0	1	4	●	1	●	○	○
Blair Lake	-	-	-	-	-	-	-	-	-	-
Oklahoma	-	-	-	-	-	-	-	-	-	-
Yukon	A-10, OA-10, B-1B, B-2, B-52H, F15C/D/E, F-16, F-117	-	-	-	-	-	-	-	-	-

Key: ● = fully supported. ○ = not supported. - = No data. ESS = electronic scoring site

Appendix J: Condition Ratings for Army Ranges and Training Lands

FCG		FCC	ISR Part 1 Condition
	Ranges		
17801	BASIC 10M-25M FIRING RANGE (ZERO)	17801	C3
17802	FIELD FIRE RANGE, NON-AUTOMATED	17802	
	AUTOMATED FIELD FIRE (AFF) RANGE	17803	
17804	RECORD FIRE RANGE NON-AUTOMATED	17804	
	AUTOMATED RECORD FIRE (ARF) RANGE	17805	
	MODIFIED RECORD FIRE (MRF) RANGE	17806	
17807	NIGHT FIRE (SMALL ARMS) RANGE	17807	C3
	AUTOMATED NIGHT FIRE (SMALL ARMS) RANGE	17808	
17810	KNOWN DISTANCE (KD) RANGE	17810	C3
17811	SNIPER FIELD FIRE RANGE	17811	
	AUTOMATED SNIPER FIELD FIRE RANGE	17812	
17821	COMBAT PISTOL/MP FIREARMSQUALIFICATION COURSE	17821	C3
	AUTOMATED COMBAT PISTOL/MP FIREARMSQUALIFICATION COURSE	17822	
	SUB-MACHINE GUN RANGE	17823	
17831	MACHINE GUN TRANSITION RANGE	17831	C3
	MACHINE GUN FIELD FIRE RANGE	17832	
	AUTOMATED MULTIPURPOSE MACHINE GUN RANGE (MPMG) RANGE	17833	

FCG		FCC	ISR Part 1 Condition
	Ranges		
17801	BASIC 10M-25M FIRING RANGE (ZERO)	17801	C3
17802	FIELD FIRE RANGE, NON-AUTOMATED	17802	
	AUTOMATED FIELD FIRE (AFF) RANGE	17803	
17804	RECORD FIRE RANGE NON-AUTOMATED	17804	
	AUTOMATED RECORD FIRE (ARF) RANGE	17805	
	MODIFIED RECORD FIRE (MRF) RANGE	17806	
17807	NIGHT FIRE (SMALL ARMS) RANGE	17807	
	AUTOMATED NIGHT FIRE (SMALL ARMS) RANGE	17808	
17810	KNOWN DISTANCE (KD) RANGE	17810	C3
17811	SNIPER FIELD FIRE RANGE	17811	
	AUTOMATED SNIPER FIELD FIRE RANGE	17812	
17821	COMBAT PISTOL/MP FIREARMSQUALIFICATION COURSE	17821	C3
	AUTOMATED COMBAT PISTOL/MP FIREARMSQUALIFICATION COURSE	17822	
	SUB-MACHINE GUN RANGE	17823	
17831	MACHINE GUN TRANSITION RANGE	17831	C3
	MACHINE GUN FIELD FIRE RANGE	17832	
	AUTOMATED MULTIPURPOSE MACHINE GUN RANGE (MPMG) RANGE	17833	

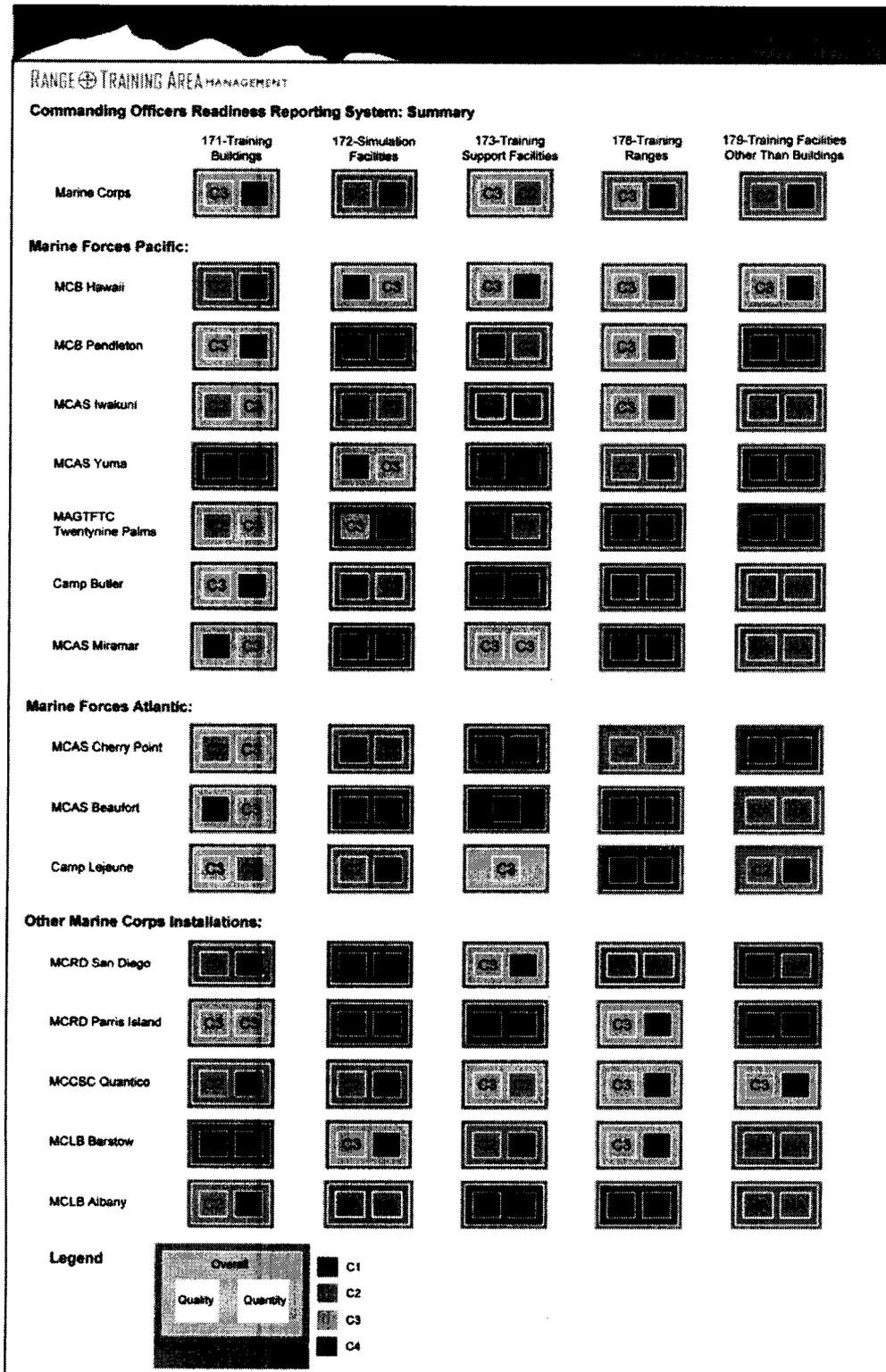
FCG		FCC	ISR Part 1 Condition
	Ranges		
17871	AIR DEFENSE GUNNERY RANGE	17871	C3
	AIR DEFENSE MISSILE FIRING RANGE	17872	
17881	HAND GRENADE QUALIFICATION COURSE (NON-FIRING)	17882	C3
17883	HAND GRENADE FAMILIARIZATION RANGE (LIVE)	17883	
17884	GRENADE LAUNCHER RANGE	17884	C3
17885	LIGHT DEMOLITION RANGE	17885	C3
	HEAVY DEMOLITION AREA	17886	
	FLAME OPERATIONS RANGE	17887	
17888	ENGINEER QUALIFICATION RANGE, NON-STANDARDIZED	17888	
	ENGINEER QUALIFICATION RANGE, AUTOMATED/STANDARDIZED	17889	
17891	INFILTRATION COURSE	17891	
17892	FIRE AND MANEUVER RANGE	17892	
17893	SQUAD DEFENSIVE RANGE	17893	C3
17894	INFANTRY SQUAD BATTLE COURSE	17894	C3
	AUTOMATED INFANTRY SQUAD BATTLE COURSE	17895	
	INFANTRY PLATOON BATTLE COURSE	17896	
	AUTOMATED INFANTRY PLATOON BATTLE COURSE	17897	
17898	MOUT ASSAULT COURSE (MAC)	17898	C3
17910	AERIAL HARMONIZATION RANGE	17910	
17911	AERIAL GUNNERY RANGE	17911	C3
	AERIAL GUNNERY RANGE AWSS	17912	
17913	CLOSE AIR SUPPORT RANGE	17913	C3
	AERIAL BOMBING RANGE	17914	

FCG		FCC	ISR Part 1 Condition
Ranges			
17995	MOUT COLLECTIVE TRAINING FACILITY (SMALL)	17996	
	MOUT COLLECTIVE TRAINING FACILITY (LARGE)	17997	
39069	RDT&E RANGE	39069	C3
Land			
17700	MANEUVER/TRAINING AREA, LIGHT FORCES	17710	C3
	MANEUVER/TRAINING AREA, AMPHIBIOUS FORCES	17711	
17720	MANEUVER/TRAINING AREA, HEAVY FORCES	17720	C3
IMPACT			
17730	IMPACT AREA, DUDDDED	17730	
	IMPACT AREA, NON-DUDDDED	17731	

Note: FCG = Facility Category Group
 FCC = Facility Category Code
 ISR Part 1 = Installation Status Report, Part 1, Facilities

C-Rating:	C-1
Definition:	Almost all ($\geq 95\%$) required facilities on hand Meets unit/activity needs and Army Standards Very minor, if any, functional deficiencies Infrastructure fully supports mission performance
C-Rating:	C-2
Definition:	Most ($\geq 80\%$) required facilities on hand Meets unit/activity needs and partly meets Army Standards Minor functional deficiencies Infrastructure supports majority of assigned missions
C-Rating:	C-3
Definition:	Majority of ($\geq 60\%$) required facilities on hand Meets majority on unit/activity needs; does not meet Army Standards Some functional deficiencies Impairs mission performance
C-Rating:	C-4
Definition:	Less than 60% of required facilities on hand Facilities do not meet unit/activity needs or Army Standards Major functional deficiencies Significantly impairs mission performance
C-Rating:	C-5
Definition:	Undergoing major reorganization Newly activated/inactivated installation or base closure

**Appendix K: Summary Results from Marine Corps 2002
Commanding Officers Readiness Reporting System
(CORRS)**



Note:

C-1: Ready for all missions; only minor deficiencies with negligible impact on capability to perform required missions.

C-2: Ready for bulk of missions; some deficiencies with limited impact on capability to perform required missions.

C-3: Ready for some portion of missions; significant deficiencies that prevent performing some missions.

C-4: Not ready for missions; major deficiencies that preclude satisfactory mission accomplishment