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EASTERN GULF OF MEXICO OIL AND GAS EXPLORATION AND MILITARY READINESS

Introduction

Gaining access to domestically available and affordable energy resources is of paramount importance to the U.S. economy and national security. Currently, America relies on foreign oil for 60 percent of total national consumption.¹

The availability and costs of petroleum-based fuels impact the federal government's operations and spending most acutely through agencies of the Department of Defense (DoD). With the current cost of a barrel of oil averaging \$77 (after having fluctuated from about \$40 per barrel to about \$147 per barrel over the past year), DoD's capability to adequately fund operations and maintenance accounts according to its approved budget is always uncertain.² The Energy Information Administration's 2009 Annual Energy Outlook forecasts oil prices to recover from their recent decline, rising to a price of \$130 per barrel (in 2007 dollars) by the year 2030 when, according to their forecasts, fossil fuels will still constitute more than 79 percent of total energy use.³ According to the

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- 1 Anita Dancs, "The Military Costs of Securing Energy," National Priorities Project, Oct. 2008, pg. 17, http://www.nationalpriorities.org/auxiliary/energy_security/full_report.pdf accessed 26 August 09.
 - 2 Bloomberg Energy Prices, <http://www.bloomberg.com/energy/> accessed 1 Nov 09.
 - 3 Department of Energy, Energy Information Administration, Annual Energy Outlook 2009 Presentation, 17 December 08, http://www.eia.doe.gov/oiaf/aeo/aeo2009_presentation.html accessed 2 September 09.

Brookings Institution, every \$10 increase in the price of a barrel of oil increases the cost of DoD operations by \$1.3 billion.⁴

The Department of Energy (DoE), the Department of the Interior (DoI), and oil industry organizations agree that the most valuable, and most reasonably available, oil and natural gas fields accessible to the United States lie in the Gulf of Mexico. At the same time, the Gulf also provides a number of military bases with offshore special use airspace (SUA) and offshore surface operations areas (OPAREA), used for training missions.

Some in the energy policy debate have raised concerns over the potential impact on military readiness of expanded oil and natural gas exploration in the Eastern Gulf of Mexico, especially after the Senate Energy and Natural Resources Committee approved legislation last summer that contained a provision to open this area to exploration. This report examines this complex issue to determine whether military training and oil and gas exploration can occur concurrently, not only as they do today in the Western and Central areas of the Gulf, but across the entire Gulf of Mexico, and in so doing, bring a broader range of economic and security benefits to the people of the United States. It does so by analyzing specific details of congressional actions, DoD reports on the sustainability of training ranges, General Accountability Office (GAO) assessments of the DoD reports, and reports issued by the Mineral Management Service (MMS) of the DoI. Also included are statements taken from consultations with officials from the GAO, the MMS, and the Offices of the Secretary of Defense, the Department of the Navy, and the Department of the Air Force. The conclusions and recommendations indicate the challenges and opportunities associated with efforts to produce more reliable and affordable domestic energy resources.

This paper was produced by Securing America's Future Energy in collaboration with Commonwealth Consulting Corporation, led by Colonel Martin Sullivan, USMC (Ret.)

4 P.W. Singer and Jerry Warner, "Fueling the "Balance"—A Defense Energy Strategy Primer," Brookings Institution, 25 August 09, pg. 3.

Executive Summary

Over the last year, the issue of encroachment on military training and testing ranges through potential expanded oil and natural gas exploration in the Eastern Gulf of Mexico has become a source of debate in Washington and elsewhere. Encroachment is a complex issue, requiring detailed research and analysis. It is therefore all the more remarkable that this report's primary finding is this: **the DoD's ability to assess the impacts of encroachment on its training and testing ranges has only in the past year reached a level whereby the department could, for ranges in specific locations, credibly assert that non-military activities may or may not be detrimental to national security.**

Therefore, the oft-referenced 2005 letter from then-Secretary Donald Rumsfeld to the Senate Armed Services Committee and other assertions that oil and gas exploration and development in the Eastern Gulf of Mexico would negatively affect military training and readiness **were premature and based on incomplete information.**

DoD is currently reviewing its position on the issue of expanding oil and gas exploration in the Outer Continental Shelf (OCS). This issue is certain to continue to evolve. That said, the following can be stated with confidence:

1. For many years, senior DoD civilian and military officials consistently reported that their forces have had an increasingly difficult time carrying out realistic training and testing due to constraints caused by encroachment on military ranges. In response, in 2002 Congress required that the Secretary of Defense develop a comprehensive plan for using existing authorities to address training and testing constraints.⁵
2. The GAO was tasked with reviewing, assessing, and commenting on DoD's comprehensive plan. Consistently from 2004 through 2007, the GAO found that DoD either failed entirely or did not completely address the required elements of the law.⁶ It was not until 2008 that DoD was able to begin establishing measurable goals and milestones, thus allowing **for the first time** a meaningful assessment of specific ranges and their abilities to support assigned missions.
3. The DoD 2009 Sustainable Range assessment showed:
 - The Air Force's overall range encroachment score (the average of all USAF range scores) was 9.07 out of 10, indicating minimal risk to mission areas, with 82 percent of the Air Force's mission range areas only minimally impacted by encroachment.⁷ The encroachment

5 Public Law 107-304, Title III, Section 366 dtd 2 December 2002.

6 The four required elements of P.L. 107-304: (1) determining the adequacy of resources to meet current and future training range and testing requirements; (2) identifying DoD's goals and milestones for tracking planned actions and measuring progress; (3) assigning the designation of offices within OSD and the military departments that are responsible for overseeing the implementation of DoD's sustainable ranges comprehensive plan; and, (4) providing DoD's plans to improve its readiness reporting system.

7 DoD 2009 Report to Congress on Sustainable Ranges, Undersecretary of Defense (Personnel and Readiness), May 2009, pg. 89.

assessment for Eglin Air Force Base Ranges, which included Eglin land ranges in the weighted assessment, was 8.52, **indicating the total Eglin Range Complex was only minimally impacted by encroachment.**⁸

- The Navy's overall range encroachment score (the average of all Navy ranges scores) was 8.49 out of 10, indicating minimal risk to mission areas, with 72 percent of the Navy's mission range areas only minimally impacted by encroachment.⁹ The Gulf of Mexico offshore surface operations area (GOMEX OPAREA) encroachment assessment, which included the Pensacola, New Orleans, and Corpus Christi OPAREAs in the weighted assessment, was 8.60, **indicating the total GOMEX OPAREA Complex to be only minimally impacted by encroachment despite ongoing oil and gas exploration and drilling in all three OPAREAs.**¹⁰
 - Encroachment factors have had little impact, or impose low risks, on the Navy's Point Mugu Sea Area and Southern California (SOCAL) OPAREA Range Complexes and their ability to support their assigned mission training and testing tasks, despite being located in the midst of oil and gas drilling and commercial fishing operations.¹¹
4. Most, if not all, missile and target drone flight paths and intercepts in the Eastern Gulf take place over the confines of only two warning areas (W-151 and W-470). These areas comprise greater than 80 percent of scheduled hours but are used only intermittently for air-to-air or air-to-surface weapons testing.¹²
 5. Current military aircraft, ship and weapon performance parameters and projected future capabilities can be developed and tested in existing joint special use airspace and OPAREAs in the Gulf of Mexico.¹³
 6. The combination of current and projected radar and missile systems on USAF (and USN and USMC) fighter aircraft are capable of effectively engaging similarly-sized targets in an air-to-air scenario only out to approximately 40 nautical miles.¹⁴ Therefore, it is unlikely that any weapons testing mission flown by the military should require more airspace at any one time than is available within the confines of the W-151 or W-470 subareas, most of which are in excess of 60 nautical miles from their northern border to southern limits and 80 nautical miles from their eastern borders to their western borders.
 7. It is understood that any commercial entity intending to operate in the OCS testing and training areas must agree to assume all risk of damage or injury to persons or property by reason of activities of any agency of the federal government. In addition, the commercial entity must

8 Ibid, pg. 93.

9 Ibid, pg. 59.

10 Ibid, pg. 63.

11 Ibid, pg. 83-84.

12 MDA, PEIS, accessed 5 August 09.

13 Federation of American Scientists, APG-63(V)3 and AIM-120 capabilities.

14 Ibid.

agree to indemnify and save harmless the United States against all claims for loss, damage, or injury that occur in those special use airspace or OPAREAS in connection with the operations and activities agreed to with military control agencies.¹⁵

8. Military control agencies that are responsible for scheduling, coordinating, and monitoring surface and airborne operations within the confines of special use airspace and OPAREAS are capable of tracking commercial and civil aircraft and surface vessels by radar as well as communicating with those aircraft, vessels, and stationary platforms via two-way radio. For Air Force and Naval flight operations, it is routine when preparing for offshore live air-to-surface or air-to-air weapons testing or training with the goal of destroying a surface or air target not only to issue notices to airmen (NOTAMS) but to also: 1) fly during daylight hours; and 2) through the use of safety observer aircraft, ensure the accomplishment of a radar and visual sweep of the potential debris impact area to verify that the area is clear of non-participating platforms.
9. The services are assessing their training range requirements and are in search of innovative approaches to accommodating and managing oil and gas exploration in the Eastern Gulf of Mexico.¹⁶

We contend, then, after reviewing the most recent DoD assessment of training operations, SRI data and environmental impact studies accomplished by DoD agencies and the services, **that previous assertions on the part of the Office of the Secretary of Defense and the services regarding civilian encroachment impinging on military ranges and readiness were, and continue to be, not credible, specifically in reference to the Eglin Water Test Areas and the Navy's GOMEX and Key West Range Complexes.**

We do not believe that current and future military testing and training requirements necessitate the maintenance of offshore areas in the Gulf of Mexico intended to exclude specific classes of commercial airborne, surface, or subsurface activities.

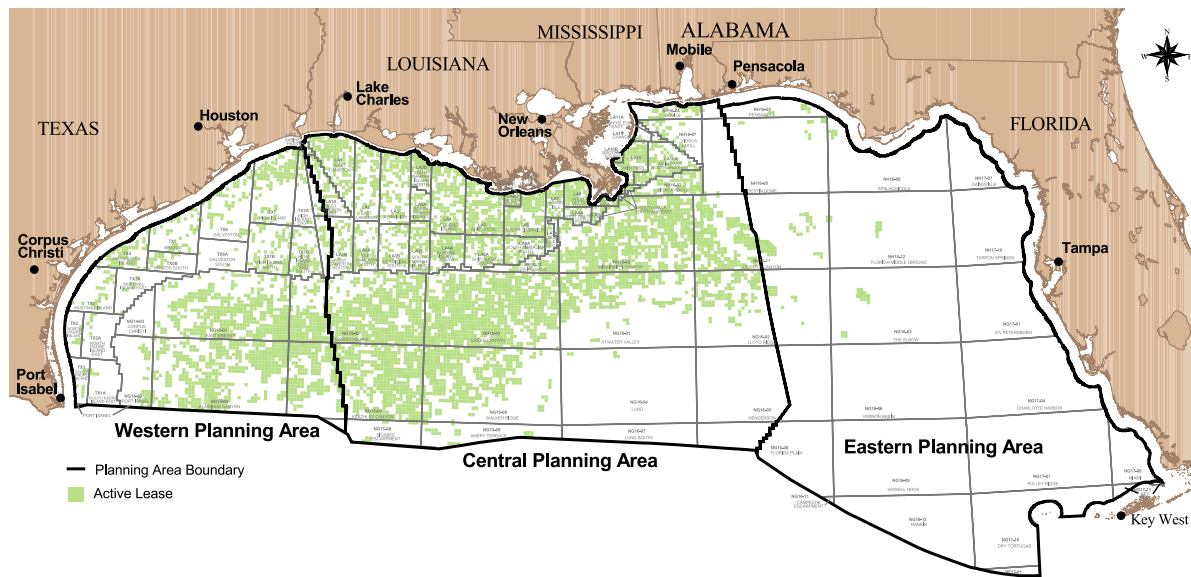
¹⁵ Ibid.

¹⁶ Emerald Coast Living and the CCC's interviews with representatives of DOD/Service Installations and Environment directorates.

1.0 Gulf of Mexico Oil and Gas Exploration, Production, Reserves and Restrictions

Figure 1 below shows active offshore oil and gas leases numbering in the thousands in the areas of the Western and Central Planning Areas of the Gulf of Mexico (GOMEX). According to the U.S. Minerals Management Service (MMS), from 1949 to the end of 2005, those oil and gas fields produced more than 14 billion barrels of oil and 164 trillion cubic feet of natural gas (see Annex A, Table A for production and reserve data by specific field).¹⁷

FIGURE 1. MMS GOMEX REGION PLANNING AREAS AND ACTIVE LEASES¹⁸



	TOTAL BLOCKS	TOTAL ACRES	NUMBER OF LEASES	ACRES LEASED
Western Planning Area	5,240	28,576,583	1,715	9,620,635
Central Planning Area	12,409	66,452,086	4,957	26,104,632
Eastern Planning Area	11,526	64,556,650	122	659,264
Sub-Totals	29,175	159,585,319	6,794	36,384,531
CPA, EPS split blocks*	(86)		(9)	
TOTALS	29,089	159,585,319	6,785	36,384,531

* CPA and EPA contain 86 shared blocks of which 9 are leased. These blocks are given both a CPA and EPA designation in the data which accounts for a higher block total.

As is clear from the figure, though potential oil and gas fields in the Eastern Planning Area of the Gulf have been explored, they have been utilized to a much lesser extent than the proven fields in

¹⁷ Department of the Interior, OCS Report MMS 2009-022, "Estimated Oil and Gas Reserves in the Gulf of Mexico," December 31, 2005, May 2009, <http://www.gomr.mms.gov/PDFs/2009/2009-022.pdf> accessed 13 August 09.

¹⁸ Gulf of Mexico Region Lease Map, http://www.gomr.mms.gov/homepg/lseale/mau_gom_pa.pdf accessed 9 December 09.

the Western and Central Areas. Exploratory drilling commenced in the Eastern Gulf in the 1970s, south of Panama City, Florida, the homeport of the Naval Surface Warfare Center. Since then, 20 of 64 test wells drilled in the Eastern Planning Area have had commercially producible hydrocarbon (natural gas, condensate, and oil) discoveries.¹⁹

According to the latest MMS and National Petroleum Council (NPC) data, the Eastern Gulf of Mexico contains in total more than 3.6 billion barrels of technically recoverable oil and 21 trillion cubic feet of technically recoverable natural gas, enough to provide for Florida’s energy needs alone for many years.^{20 21} In 2007, as seen in Table A below, the NPC indicated that absent drilling restrictions, upwards of 488 million barrels of oil and 2.5 billion cubic feet of natural gas could be produced by 2025 in the Eastern Gulf.

TABLE A. ESTIMATED OIL AND GAS SUPPLIES IN OUTER CONTINENTAL SHELF MORATORIA AREAS²² ASSUMING MMS MEAN RESOURCE ESTIMATES AND THE JANUARY 2006 CBO PRICE FORECAST (ALL ESTIMATES IN 2006 DOLLARS)

MORATORIA AREA	Incremental Production by 2025		Cumulative Production through 2025		Cumulative Investment to 2025	Value of Avoided Oil Imports to 2025	Cum. Federal Royalties to 2025	Cum. Federal Inc. Taxes to 2025	Maximum Direct Jobs	Maximum Total Jobs
	Crude Oil (MMB/Day)	Natural Gas (Bcf/Year)	Crude Oil (Million Bbl)	Natural Gas (Bcf)	(Million \$)	(Million \$)	(Million \$)	(Million \$)		
Alaska - North Aleutian Basin	0.02	45	89	601	\$2,681	\$4,671	\$1,642	\$1,132	2,221	8,576
Atlantic Offshore	0.17	392	400	2,717	\$19,238	\$21,095	\$7,423	\$5,115	25,447	57,860
Eastern Gulf of Mexico	0.20	370	488	2,564	\$21,099	\$25,736	\$7,977	\$5,490	40,820	76,039
Central Gulf of Mexico	0.15	286	650	3,785	\$18,432	\$34,273	\$11,149	\$7,684	19,020	79,440
Pacific Offshore	0.47	300	1,132	2,078	\$36,714	\$59,697	\$12,937	\$8,865	54,561	212,306
ALL MORATORIA AREAS	1.01	1,394	2,758	11,746	\$98,163	\$145,472	\$41,128	\$28,285	130,634	328,984

Nevertheless, at least since the late 1980s, there have been longstanding concerns raised by the state of Florida regarding the potential negative effects of exploration in the Eastern Gulf of Mexico. Those concerns were often expressed in various legal filings against oil and gas companies by the DoI, finally culminating in an agreement to enact an exploration moratorium in 2002.²³ This moratorium was to last until 2012 and covered oil and gas exploration in the Eastern Gulf in an area referred to as the Destin Dome Unit.

19 MMS Eastern Gulf of Mexico Overview, <http://www.gomr.mms.gov/homepg/offshore/egom/activity.html#egom> drilling activities, accessed 3 September 09.
20 National Petroleum Council, "Global Access to Oil and Gas," July 18, 2007, pg. 4. http://www.npc.org/Study_Topic_Papers/7-STG-GlobalAccess.pdf accessed 3 August 09.
21 Department of the Interior, OCS Report MMS 2009-022.
22 Ibid.
23 U.S. Department of the Interior News, Interior Settles Litigation on Offshore Oil and Gas Leases in Destin Dome, <http://www.gomr.mms.gov/homepg/whatsnew/newsreal/2002/020529hq.html> accessed 24 September 09.

In 2006, Congress, not to be left on the sideline, and with the support of the DoD, imposed a ban on oil and gas exploration through the year 2022 via the Gulf of Mexico Energy Security Act (GOMESA). The ban applied to all fields in the Eastern Gulf that are either within 125 miles of Florida, east of a dividing line known as the Military Mission Line (MML) at 86° 41' West Latitude, or in the Central Gulf within 100 miles of Florida.²⁴

At that time, DoD's stated concerns regarding possible encroachment by commercial entities on training areas in the Eastern Gulf of Mexico weighed heavily in influencing congressional deliberations as well as the final vote on the GOMESA. In fact, in 2005, prior to the congressional restrictions being enacted, Secretary of Defense Rumsfeld issued a letter in response to a query from the Senate Armed Services Committee indicating that the areas east of the MML were "especially critical to DoD due to the number and diversity of military testing and training conducted there now, and those planned for the future. In those areas east of the Military Mission Line, drilling structures and associated development would be incompatible with military activities."²⁵

2.0 Gulf of Mexico Military Range Complexes: Real or Perceived Challenges?

For many years, senior DoD civilian and military officials consistently reported that their forces were having an increasingly difficult time carrying out realistic training and testing due to constraints caused by encroachment on military ranges and installations from a myriad of factors, including munitions restrictions, transient ships or aircraft, electronic spectrum limitations, critical habitats, and adjacent water or land use by civilian or commercial entities, including offshore oil and natural gas facilities. However, upon examining the issue closely, it becomes readily apparent that, at the time, they had no factual basis for making those claims. Despite direction from Congress, until last year DoD had failed to adequately collect and analyze data regarding training and testing constraints due to encroachment.

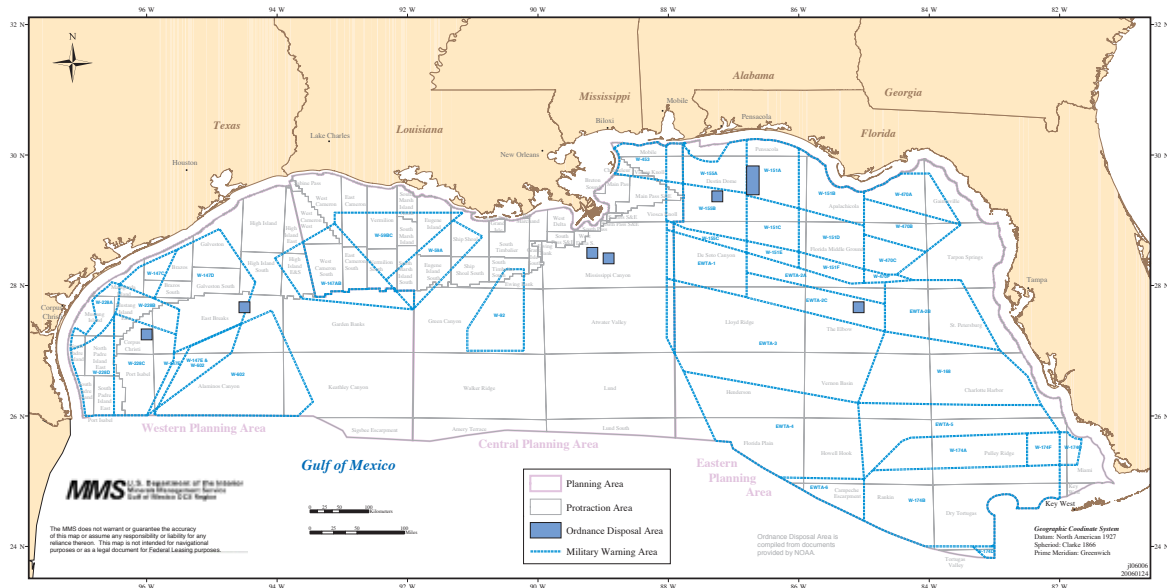
As shown in Figure 2, DoD has established a large number of air and sea operations and training areas in the Gulf of Mexico. The Secretary of the Navy acts as the DoD Executive Agent for Outer Continental Shelf matters and works with the DoI and appropriate coastal states to ensure the compatibility between DoD offshore military activities and DoI's and states' mineral leasing plans.²⁶

24 MMS, 5-year Leasing Program, GOMESA Moratorium, <http://www.mms.gov/offshore/GOMESA/PDFs/GOMESA.pdf> accessed 10 August 09.

25 Secretary of Defense Donald Rumsfeld ltr to Senator John Warner, OSD 22548-05, dtd 30 November 05.

26 Department of Defense Directive 3100.5, DoD Offshore Military Activities Program, issued 16 March 87.

FIGURE 2. GOMEX OIL AND GAS EXPLORATION FIELDS AND MILITARY SPECIAL USE AIRSPACE AND SURFACE OPAREAS²⁷



A larger version of this map can be found on page 31.

In response to DoD complaints, Congress in Title III, Section 366 of the National Defense Authorization Act for Fiscal Year 2003 (2003 NDAA) required that the Secretary of Defense develop a comprehensive plan for using existing authorities to address training and testing constraints.²⁸ Section 366 also required the Secretary to submit the plan, the results of the assessments and evaluation, and any recommendations for legislative or regulatory changes to address training constraints at the same time the President submitted the budget for fiscal year 2004. Afterwards, annual status reports (later alternatively called Sustainable Military Training Range Reports or Reports to Congress on Sustainable Ranges) on implementation of the plan and any additional actions would be required between fiscal years 2005 and 2013.²⁹ Additionally, Section 366 required the Secretary to develop and maintain an inventory that identified all available operational training ranges, all training range capacities and capabilities, and any training constraints caused by encroachment at each training range.

In the 2003 NDAA, the GAO was tasked by Congress with reviewing, assessing, and commenting upon the sufficiency and acceptability of the Secretary of Defense’s annual submission of the Sustainable Military Training Range Reports. Consistently, from 2004 through 2007, GAO reported

27 MMS Gulf of Mexico Ordnance Disposal Areas, <http://www.gomr.mms.gov/homepg/regulate/enviro/jlo60o6.pdf> accessed 3 August 09.

28 Public Law 107-304, Title III, Section 366 dtd 2 December 2002.

29 Section 366 originally required reports for Fiscal Years 2005 through 2008. The requirement was extended through 2013 by the NDAA of Fiscal Year 2007, Section 348, Public Law 109-364 (2006).

that while DoD made yearly improvements in its report, the department either failed entirely or did not completely address the four required elements (usually due to lack of data): (1) determining the adequacy of resources to meet current and future training range and testing requirements; (2) identifying DoD's goals and milestones for tracking planned actions and measuring progress; (3) designating offices within the Office of the Secretary and the military departments responsible for overseeing the implementation of DoD's sustainable ranges comprehensive plan; and, (4) providing DoD's plans to improve its readiness reporting system.³⁰

In GAO interviews during reviews of the reports, DoD officials indicated that the volume of data required to identify capacities, capabilities, and training and testing constraints on all of their ranges was overwhelming, and thus it was impractical to set goals for sustaining the ranges and to monitor progress towards achieving those goals. Some of the capability assessments offered in the annual reports were based on subjective evaluations rather than standardized criteria.³¹ Over the years, these issues made it impossible for GAO, and by inference, DoD, to adequately evaluate the degree to which encroachment or other factors impacted the services' abilities to train and test on those ranges.

It was not until preparing for the 2008 annual report that DoD officials established standardized criteria to identify common factors to be used in assessing a range's ability to support assigned missions.³² DoD constructed its evaluation by assessing a given range's ability to support assigned missions using 13 common capability attributes and 12 common encroachment factors. GAO reported that devising a common framework for DoD's assessments, and establishing measurable goals and milestones, enabled the department and the services in 2008 to make meaningful comparisons and measurements of past performance and progress towards implementing the near- and long-term sustainable range objectives **for the first time**.³³

DoD's 2009 report was delivered to GAO on August 3, 2009. GAO completed its review on October 27, 2009.^{34 35} In its assessment, GAO noted that DoD had made strides to measure and report the impact that training constraints on ranges may have on readiness and, as part of its comprehensive plan to address training constraints, had developed and included broad goals for this effort and the first annual estimates of funding to reach these goals. However, according to GAO, while there has been some improvement, DoD "... has yet to develop quantifiable goals, which we have previously recommended to better track planned actions and measure progress for implementing planned actions."³⁶

Additionally, as called for by GAO since 2004, DoD has yet to develop and implement a reporting system to reflect the impact on readiness caused by training constraints. Though DoD has

30 GAO-10-103R, Military Training: DoD's Report on the Sustainability of Training Ranges dtd 27 October 09.

31 GAO-08-10R, Military Training, dtd 11 October 07.

32 DoD 2008 Report to Congress on Sustainable Ranges, Undersecretary of Defense (Personnel and Readiness), July 2008.

33 GAO-09-128R.

34 DoD 2009 Report to Congress on Sustainable Ranges, Undersecretary of Defense (Personnel and Readiness), May 2009.

35 GAO-10-103R.

36 Ibid.

completed a framework for incorporating range data into the Defense Readiness Reporting System (DRRS) and finished testing a Phase I prototype of a module to collect current range information and efficiently support readiness reporting, not until completion of a Phase II prototype module (expected in April 2010) will DoD be capable of examining the extent to which encroachment factors affect a range's ability to support various operational capabilities.³⁷

In short, it is clear that DoD has only in the last two years begun to put into place systems to objectively determine the effect of encroachment on its training and testing ranges, and even those systems are far from complete.

2.1 Current DoD Efforts to Mitigate Potential OCS Range Encroachment and Maintain Military Readiness and Training Activities

According to the DoD directive on offshore military activities, the department's policy is for the use of offshore areas to be shared with nonmilitary interests whenever they can be accommodated.³⁸ DoD has long recognized that, in areas in which its interests and that of other federal agencies, state and local governments, and civil and commercial entities overlap, it must develop and implement comprehensive plans to preserve military readiness in coordination with those stakeholders.

Today, OCS special use airspace and training areas are overseen by military control agencies whose mission is to schedule, coordinate, and monitor all surface and airborne operations within the confines of specific warning or alert areas. These agencies therefore act as the nexus for coordinating military and civil operations in the OCS training areas. Each of the areas has defined dimensions, vertically and laterally, for segregating certain military activities from civil and commercial surface or airborne traffic. These offshore warning areas are not commonly reserved for exclusive use of the military services.³⁹

Controlling agencies require two-way radio communications between participating platforms and appropriate military radar control facilities or the FAA at all times. The controlling agencies also have the responsibility and authority to adjust the vertical and lateral operating limits and other features of their assigned airspace and surface waters under prescribed procedures and conditions to facilitate user requirements, whether civil or military, whose missions otherwise could not be accomplished without creating hazards to non-participating platforms.

For example, military organizations planning to conduct live surface-to-surface, surface-to-air, air-to-surface, and air-to-air weapons testing or training in specific areas are required to issue specific notices to mariners (NOTMARS) and notices to airmen (NOTAMS) well prior to each

³⁷ Ibid.

³⁸ DoD Directive 3100.5.

³⁹ Fleet Area Control and Surveillance Facility (FACSFAC) Pensacola, Gulf of Mexico Operating Areas, <http://www.globalsecurity.org/military/facility/moa-gulf.htm> accessed 7 August 09.

weapons test.⁴⁰ NOTMARS and NOTAMS are notices containing information concerning the establishment, condition, or change in any aeronautical facility, service, procedures, or hazard, the timely knowledge of which is essential to personnel concerned with the safety of surface ship and flight operations.⁴¹ As part of their normal operating procedures, military or civilian pilots conducting flight planning refer to the DoD Internet NOTAM Service for the most immediate and accessible up-to-date information on constraints and limitations to special use airspace.⁴² Both NOTMARS and NOTAMS indicate the specific conditions that restrict transit through a defined area and the time period in which the restrictions will be active.

At the same time, it has long been routine for cooperating commercial entities and civil organizations to inform the military control agencies responsible for the OCS ranges of any ship or aircraft intending to transit special use airspace or OPAREAS. These entities may also be subject during that transit to operating according to the rules and regulations governing the area.⁴³ These anticipatory actions help the controlling agencies preemptively establish new routing or maintain enough separation (buffer zones) to reduce any likelihood of convergence, ensuring that civilian airborne, surface, and subsurface platforms and the military have negligible impact on each other's operations.

The military services acknowledge that their units play an equally critical role in preventing incidents and accidents in the OCS testing and training ranges. According to the Navy, it is standard operating procedure when at sea with surface combatants to have highly qualified and experienced observers/lookouts scanning the horizon for traffic and to couple those actions with the use of surface search radar to identify other non-military vessels/obstructions in order to take proper and effective action to avoid collisions.⁴⁴

For Air Force and Naval flight operations, it is routine when preparing for offshore live air-to-surface or air-to-air weapons testing or training with the goal of destroying a surface or air target not only to issue an NOTAM but to also: 1) fly during daylight hours; and 2) through the use of safety observer aircraft, ensure the accomplishment of a radar and visual sweep of the potential debris impact area to verify that it is clear of non-participating platforms.

Finally, it is understood that any commercial entity intending to operate in OCS testing and training areas must agree to assume all risk of damage or injury to persons or property by reason of activities of any agency of the federal government, whether such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault of the United States. The commercial entity must also agree to indemnify and save harmless the United States

40 DoD, Missile Defense Agency, Programmatic Environmental Impact Statement, January 2007, pg. H-37, <http://www.mda.mil/mdaLink/pdf/vol2.pdf> accessed 5 August 09.

41 DoD Dictionary of Military and Associated Terms, Joint Publication 1-02, 19 August 09, http://www.dtic.mil/doctrine/jel/new_pubs/jp1_02.pdf accessed 30 September 09.

42 DoD NOTAM Internet Service, <https://www.notams.jcs.mil/dinsQueryWeb/> accessed 30 September 09.

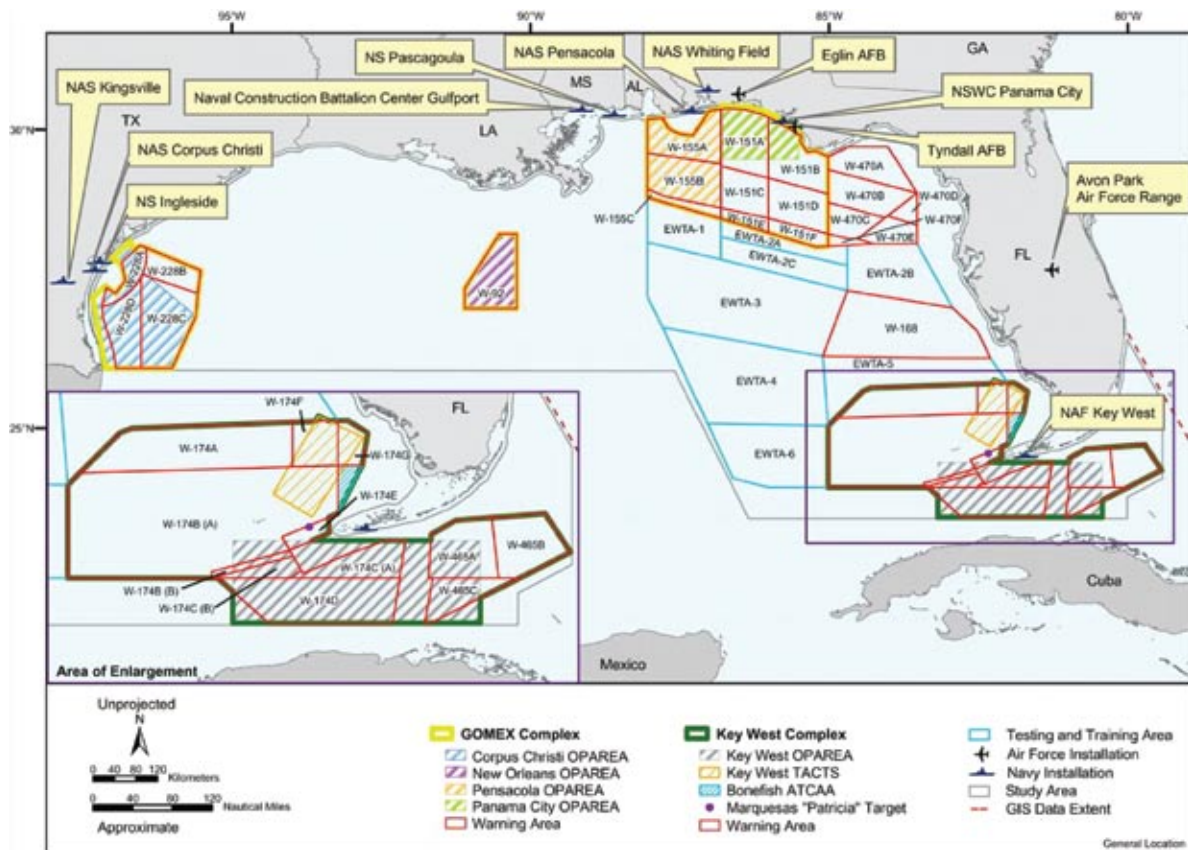
43 DoI, MMS 2005-059, OCS Environmental Assessment, <http://www.gomr.mms.gov/PDFs/2005/2005-059.pdf> accessed 11 August 09.

44 Naval Facilities Engineering Command, GOMEX EIS/OEIS, 15 February 08, <http://www.gomexrangecomplexeis.com/default.aspx> accessed 5 August 09.

against all claims for loss, damage, or injury that occur in those special use airspace or OPAREAS in connection with the operations and activities agreed to with the aforementioned military control agency.⁴⁵

3.0 Gulf of Mexico Military Training and Testing Areas

FIGURE 3. NAVY AND USAF BASES AND GOMEX, KEY WEST, AND EGLIN MILITARY RANGE COMPLEXES⁴⁶



45 DoI, MMS 2005-059.

46 Navy OPAREA Density Estimates (NODE) for the GOMEX OPAREAs August 07, <http://afasteis.gcsaic.com/docs/DON%202007j%20GOMEX%20NODE%20Final%20Report.pdf> accessed 5 Aug 09.

3.1 Eglin Water Test Areas: U.S. Air Force Primary Gulf of Mexico Military Training and Testing Areas

The Air Force believes that some instances of oil and gas exploration and drilling could be incompatible with military missions in the Eglin Water Test Areas (EWTA), which comprise much of the GOMEX Eastern Planning Area and lie east of the Military Mission Line. These areas, appearing in Figure 2 and Figure 3 as EWTAs 1-6, encompass more than 130,000 square miles of the Eastern Gulf, an area larger than the state of New Mexico, from the surface of the water up to an unlimited altitude.⁴⁷

Eglin Air Force Base representatives claim that their concerns with oil and gas activity in the Eastern Gulf areas are related to the possible damage that may occur to oil and gas platforms above the water surface as a result of debris falling from the destruction of unmanned aircraft during weapons testing and evaluation missions. Yet, most, if not all, missile and target drone flight paths and intercepts in the Eastern Gulf take place over the confines of Warning Areas W-151 and W-470. And even these areas are used most extensively (80 percent of scheduled hours) for training missions, while being used only intermittently for air-to-air or air-to-surface weapons testing.⁴⁸

Moreover, according to open source literature, the combination of current and projected radar and missile systems on USAF (or, for that matter, USN and USMC) fighter aircraft are capable of effectively engaging similarly-sized targets in an air-to-air scenario using missiles only out to approximately 40 nautical miles.⁴⁹ Most air-to-air missile engagements during testing and training are made in the “heart of the envelope,” approximately 2/3 of the missile’s maximum range, in order to increase the probability of detection, identification, and target kill. It is unlikely, therefore, that any weapons testing mission flown by the military services should require more airspace at any one time than is available within the confines of the W-151 or W-470 subareas, most of which span in excess of 60 nautical miles from their northern to southern limits and 80 nautical miles from their eastern to western borders.

It is therefore at the very least unclear how many missions per year in the EWTAs involve the downing of unmanned air systems and whether, with all the airspace available in the Eastern Gulf, warning areas located over or near potential oil and gas fields need even be chosen for use in live weapons testing. What can be stated with certainty, however, is that the military services do not appear to require an area the size of New Mexico to be clear of gas and oil drilling rigs in order to conduct the vast majority of their required airborne testing, evaluation and training missions.

Moreover, Eglin AFB officials do not believe that subsurface oil and gas wells in the EWTAs, connected by submerged pipelines to installations/facilities ashore, pose a risk to Air Force missions and, as a result, they are in the process of reassessing the service’s needs in the EWTAs in order to determine whether they can accommodate future oil and gas exploration in the Eastern Gulf of Mexico.⁵⁰

47 Emerald Coast Living, “Is Offshore Drilling affecting our National Security,” 24 January 2009, <http://atd.agranite.com/emerald-coast/living/national-security-affected-by-offshore-platforms/> accessed 3 August 09.

48 MDA, PEIS, accessed 5 August 09.

49 Federation of American Scientists, APG-63(V)3 and AIM-120 capabilities, <http://www.fas.org/man/dod/sys/aim-120.htm> accessed 30 September 09.

50 Emerald Coast Living, accessed 3 August 09.

3.2 Gulf of Mexico and Key West Range Complexes: U.S. Navy Primary Gulf of Mexico Military Training and Testing Areas

As shown in Figure 3, the Navy utilizes special use airspace and surface operations areas across the entire Gulf, including the Eastern Planning Area. More importantly, Navy OPAREAs already exist where there are significant, and ongoing, oil and gas exploration and drilling activities.

The Corpus Christi OPAREA (Warning Area W-228 and the Underwater Detonation Area), the New Orleans OPAREA (W-92), and the Pensacola OPAREA (W-151 A/C/E, W-155 A/B/C, and the Bombing Exercise Hotbox) all host a variety of multi-service air, surface, and subsurface activities related to research, development, testing, and evaluation of maritime combat technologies and military training missions.

Due to the greater number of surface and subsurface obstructions as well as commercial and civil surface and airborne traffic, the Navy has developed a comprehensive approach to sustaining and preserving its ranges. The service's Tactical Training Theater Assessment and Planning (TAP) Program allows for continuous evaluation of the training and testing operations in the Gulf and their potential effects on the environment, the community, and the economic stakeholders that rely on the resources found in the OPAREAs.

According to Navy documents filed with the National Oceanic and Atmospheric Administration (NOAA), Navy vessels use the OPAREAs intermittently; those operations are variable in duration, ranging from a few hours up to two weeks. Based on training schedules, the number of Navy vessels operating in the GOMEX OPAREAs at any one time can vary from zero to about 10. In the NOAA filing, the Navy reports that over the course of a typical year, it logs about 180 total vessel days cumulatively within the GOMEX OPAREAs.^{51 52}

However, in response to a FOIA request for information on naval ship and aircraft operations during 2008 across the entirety of the GOMEX OPAREAs, the Navy indicated that surface combatant activity (including naval gunfire operations) only occurred in the W-155 Area, and that total naval surface ship activity accounted for a total of just 20 vessel days of usage across all the GOMEX OPAREAs.⁵³

Likewise, flight operation figures in the Navy training areas indicate fewer scheduled hours and sorties in 2008 than might be expected. For example, the W-155 Area, the lateral limits of which encompass large areas of the Destin Dome and DeSoto Canyon oil and gas fields, was scheduled by the Navy and Air Force for some 3,000 hours of testing and training operations, which included approximately 5,840 aircraft sorties/missions.^{54 55}

51 National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Federal Register, 28 April 09, Volume 74, Number 80, Taking of Marine Mammals Incidental to Training Operations Conducted within the Gulf of Mexico Range Complex, <http://edocket.access.gpo.gov/2009/E9-9647.htm> accessed 5 August 09.

52 To put "vessel day" into layman's terms, 180 vessel days means, at one end of the spectrum there could have been one vessel that spent 180 days in the GOMEX OPAREAs or at the other end of the spectrum, there could have been 180 vessels that spent a portion of one day in the OPAREAs.

53 Department of the Navy, Fleet Area Control and Surveillance Facility – Jacksonville, FOIA Request Case File No. DON 200901565, response ltr 3700, Serial 60/108, dtd 09 September 09.

54 MDA, PEIS, accessed 5 August 09.

55 FACSAC Jacksonville FOIA response.

Over the course of 2008, according to the Navy's Draft GOMEX Range Complex Environmental Impact Survey (EIS), Navy surface, subsurface, and aviation operations caused no significant impact on the environment, no significant impact on regional air quality, no significant impact on water quality, and no significant impact on cultural resources, despite operating in areas of the Gulf where there are hundreds of oil and gas platforms and associated exploration and drilling activity.⁵⁶

It is apparent that the Navy's TAP program, as well as its reduced operation footprint, along with the efforts of commercial and civil organizations to mitigate OPAREA encroachment issues, have blended together to create a situation in which the majority of the service's readiness and training missions in the Gulf of Mexico are minimally impacted.⁵⁷

4.0 DoD 2009 Sustainable Range Assessment of Capabilities of and Encroachment on GOMEX Training Ranges and Test Areas

According to DoD, as described in Section 1.0 of this report, the objective of the Sustainable Range Report and Sustainable Range Initiative (SRI) cumulative assessment (the formats for which are shown in Figure 4 for comparing mission areas, range capabilities, and encroachment factors) was to provide Congress with a concise, consistent, and readily understandable report that highlights the continued evolution of the SRI. The assessments' formats also allow Congress to easily determine and measure progress against the range reporting requirements it mandated for DoD (see Annex A, Figures 2A and 2B for a detailed description of the Sustainable Range Assessment Attributes).⁵⁸

It must be noted that the data provided in the 2009 Report was updated from the 2008 Report at the discretion of the services because the data call for the 2009 Report came too soon after the 2008 Report, according to DoD.⁵⁹

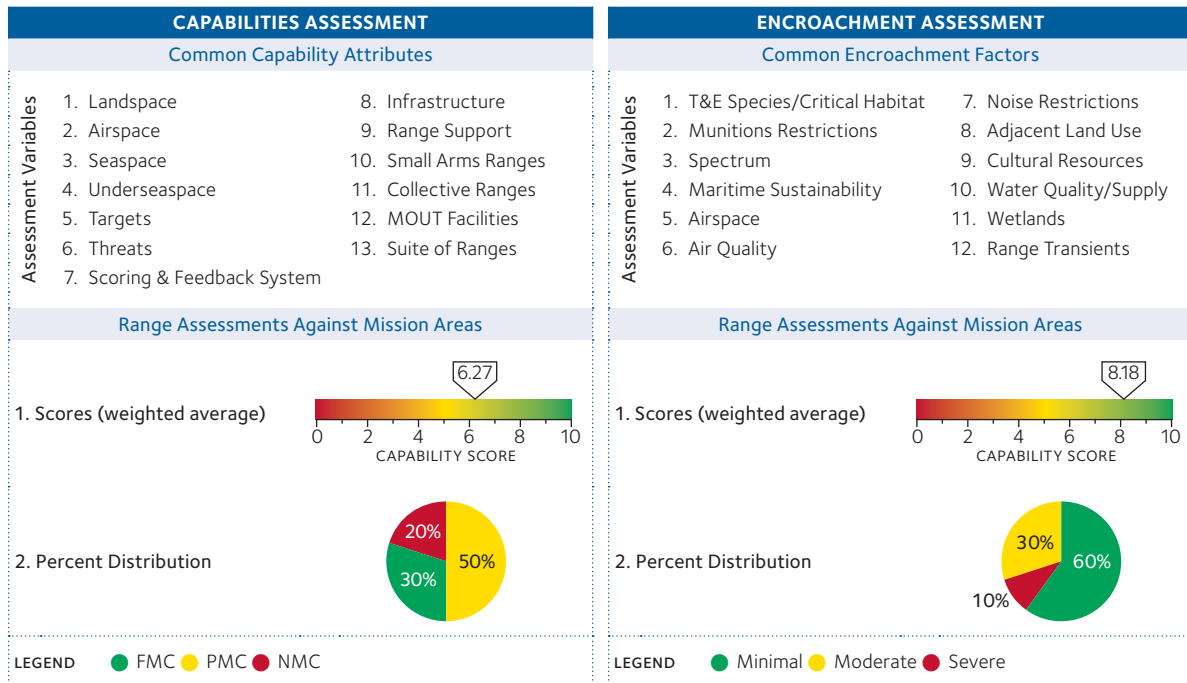
56 Naval Facilities Engineering Command, Atlantic, GOMEX EIS/OEIS, <http://www.GOMEXRangeComplexEIS.com> accessed 5 August 09.

57 DoD 2008 Report to Congress, pg. 41.

58 DoD 2009 Report to Congress, pg. 20-23.

59 Ibid., pg 2.

FIGURE 4. EXAMPLES OF DOD SUSTAINABLE RANGE INITIATIVE REPORT’S RANGE CAPABILITIES AND ENCROACHMENT DATA ⁶⁰



DoD, in concert with the services, developed a set of guidance, definitions and standards to conduct a common capabilities and encroachment assessment. DoD next established a linkage between range capability attributes and the encroachment factors for range-related mission areas.

These attributes, shown above in Figure 4, are assessed according to approved criteria and scaled consistent with the general standards of the Defense Readiness Reporting System (DRRS), where “red” indicates an assigned capability cannot be utilized or a potential hazard will severely impact mission accomplishment; “yellow” indicates a capability may be partially utilized or a potential hazard is creating moderate risk to mission accomplishment; and “green” indicates the assigned capability is not impaired or a potential hazard imposes only minimal impact to mission accomplishment.⁶¹

Obviously, not all DoD ranges have the requirement to support all possible missions areas and thus not all ranges will be graded according to each capability attribute nor will they all exhibit potential for mission area impairment from each encroachment factor.

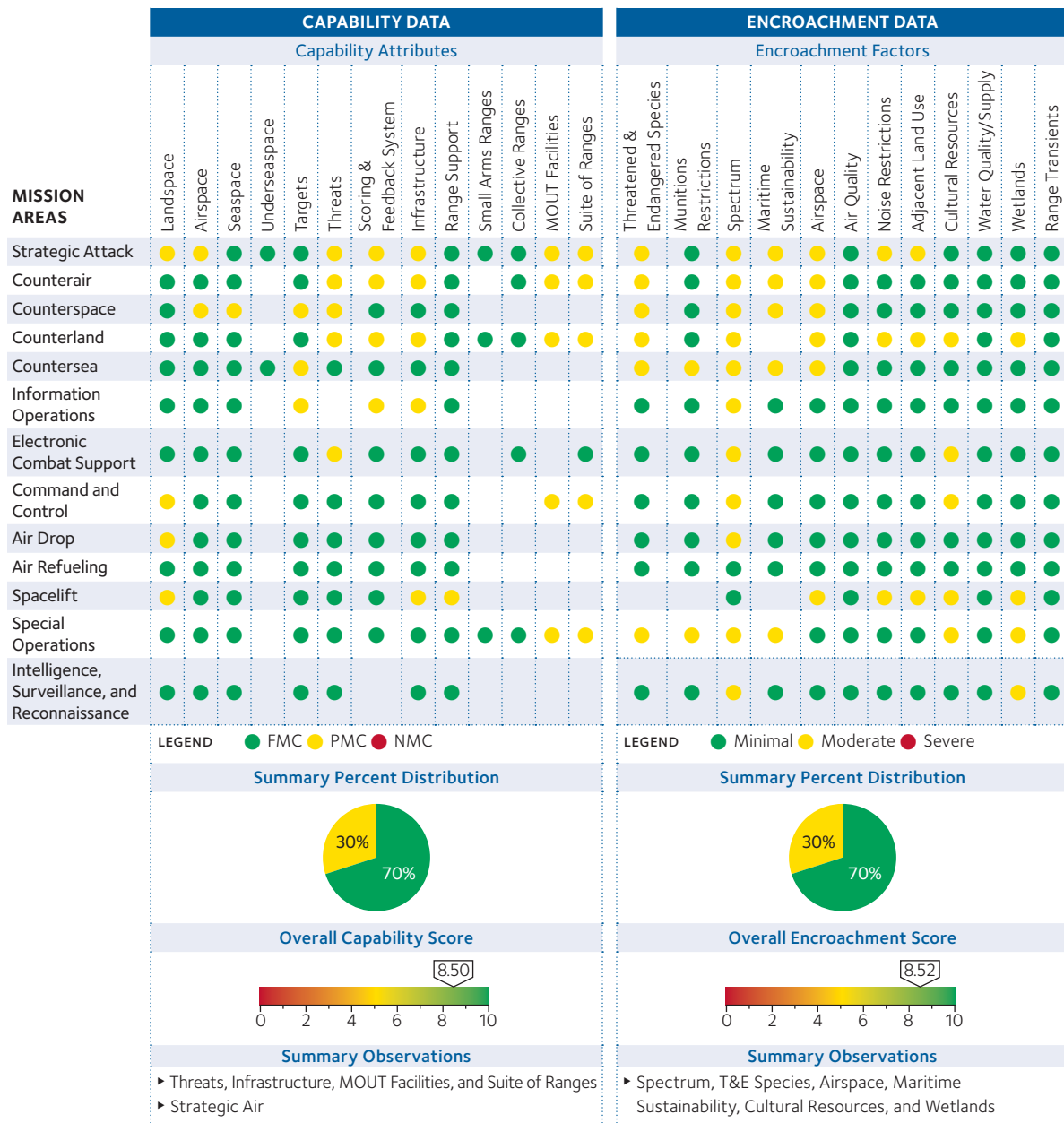
⁶⁰ Ibid., pg 24.

⁶¹ Ibid.

4.1 Eglin Range and Test Areas: Assessment of Capabilities and Encroachment Challenges

According to DoD's latest information, the Eglin Range Complex Capabilities and Encroachment assessment indicates that the ranges can support the required training and testing tasks for a given mission area to prescribed doctrinal standards and conditions. Additionally, encroachment factors have little impact, or impose low risks, on the range's ability to support its assigned mission training and testing tasks.

FIGURE 5. EGLIN RANGE COMPLEX CAPABILITIES AND ENCROACHMENT ASSESSMENT⁶²

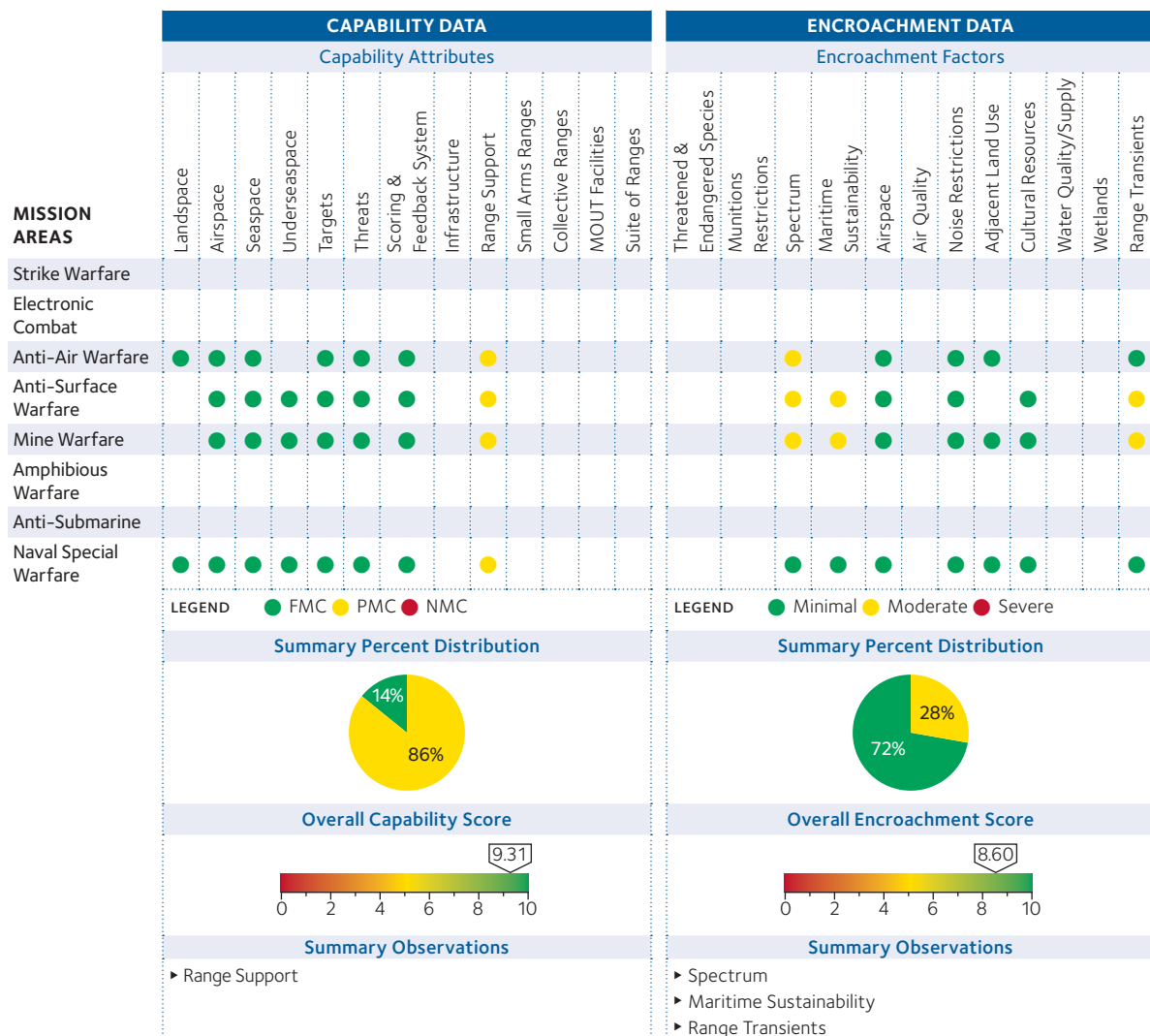


62 Ibid, pg. 98.

4.2 U.S. Navy GOMEX and Key West Range Complexes: Assessment of Capabilities and Encroachment Challenges

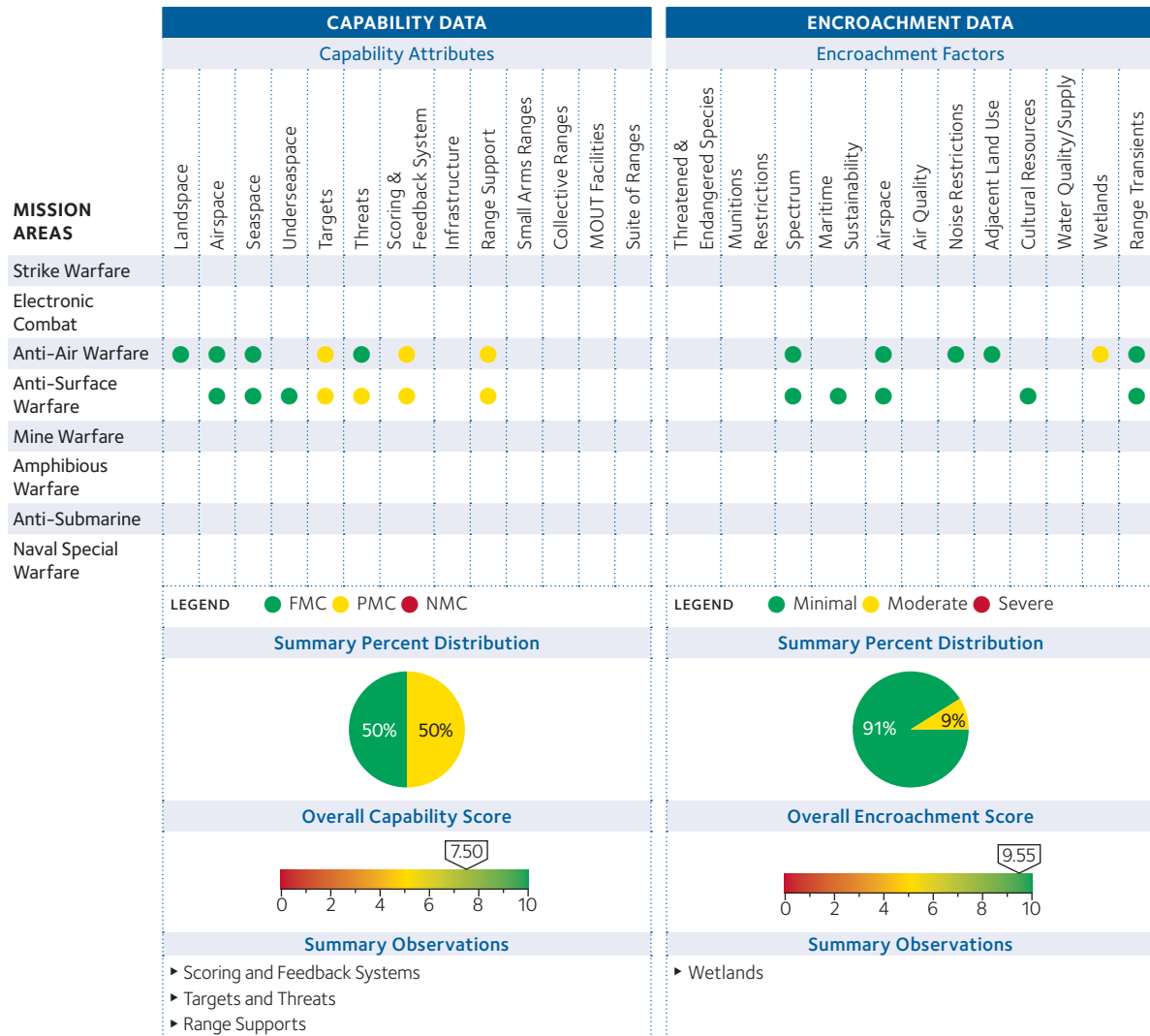
Even more impressively, given the extent of oil and gas exploration and drilling occurring in the GOMEX Range Complex, according to the latest information provided by DoD, both the GOMEX and the Key West Range Complex Capabilities and Encroachment assessments indicate that the ranges can support the required training and testing tasks for a given mission area to prescribed doctrinal standards and conditions. As with the Eglin Ranges, encroachment factors have little impact, or impose low risks, on the ranges' ability to support their assigned mission training and testing tasks.

FIGURE 6. GOMEX RANGE COMPLEX CAPABILITIES AND ENCROACHMENT ASSESSMENT⁶³



63 Ibid, pg 71.

FIGURE 7. KEY WEST RANGE COMPLEX CAPABILITIES AND ENCROACHMENT ASSESSMENT⁶⁴

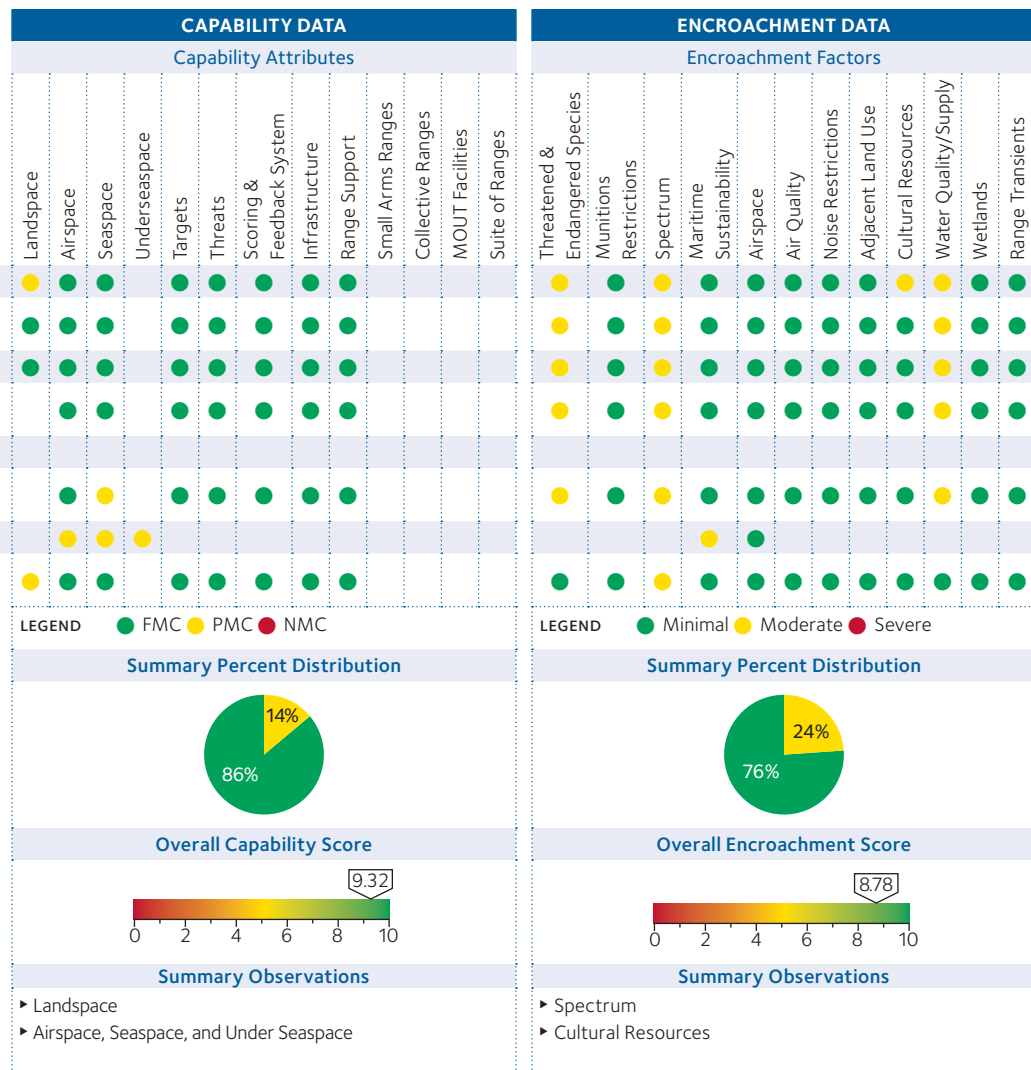


64 Ibid, pg 76.

4.3 Comparative Data – U.S. Navy Point Mugu and SOCAL Range Complexes: Assessment of Capabilities and Encroachment Challenges

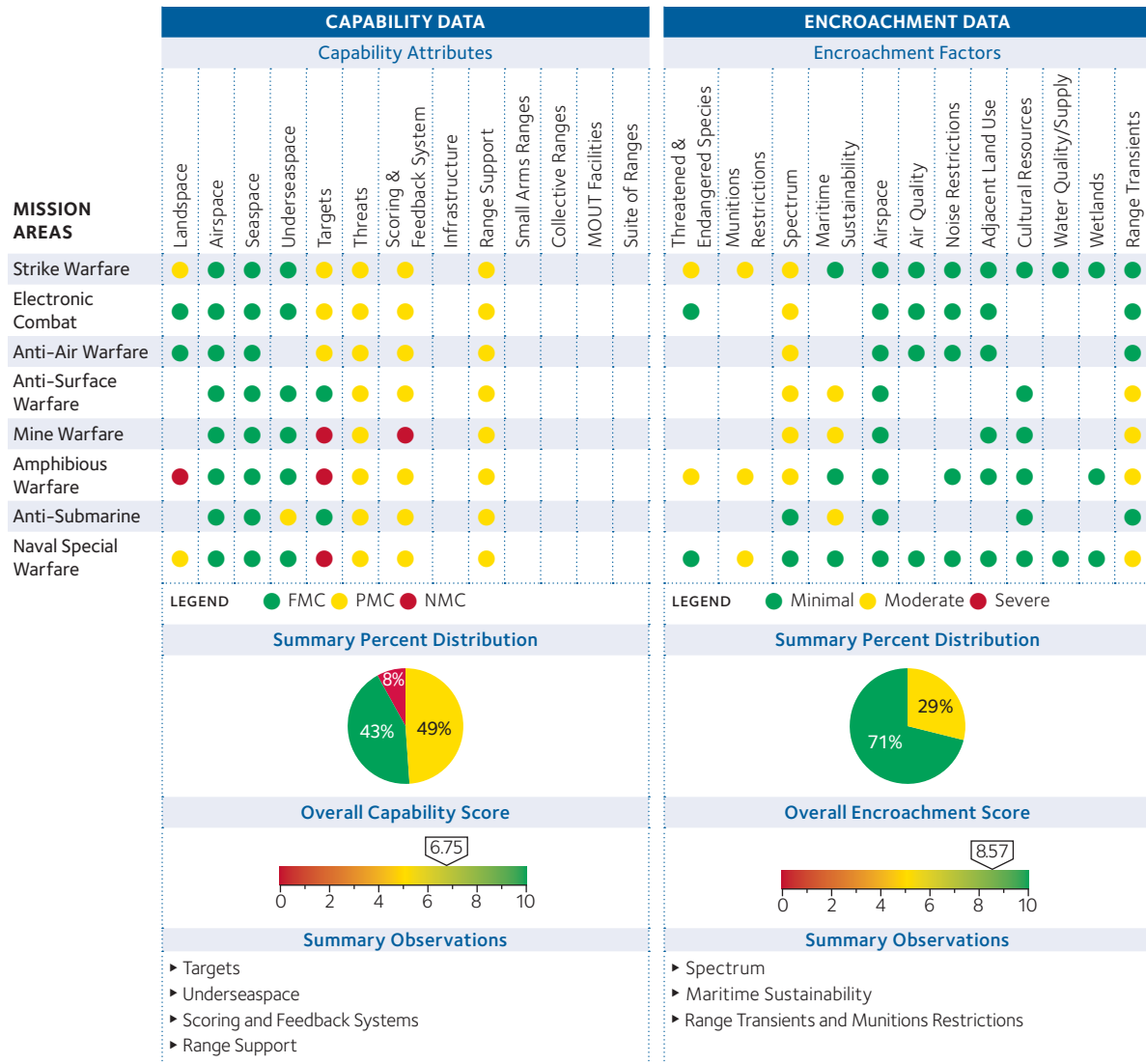
As a matter of comparison, it is useful to examine encroachment assessments in other areas in which military training co-exists with extensive oil and gas exploration and drilling. California’s Point Mugu and SOCAL Range Complexes, according to the latest Capabilities and Encroachment assessments, can support the required training and testing tasks for a given mission area to prescribed doctrinal standards and conditions. In other words, encroachment factors have had little impact, or impose low risks, on the Point Mugu and SOCAL ranges’ ability to support their assigned mission training and testing tasks despite their being located in the midst of oil and gas drilling and commercial fishing operations.

FIGURE 8. POINT MUGU SEA RANGE COMPLEX CAPABILITIES AND ENCROACHMENT ASSESSMENT⁶⁵



65 Ibid, pg 83.

FIGURE 8. SOCAL OPAREA RANGE COMPLEX CAPABILITIES AND ENCROACHMENT ASSESSMENT⁶⁶



66 Ibid, pg 84.

5.0 Conclusions

It became apparent during our research that DoD's ability to assess the impacts of encroachment on its training and testing ranges has only in the past year reached a level whereby the department could, for ranges in specific locations, credibly assert that non-military activities may or may not be detrimental to national security.

Furthermore, we found the following factors to be of significance in our analysis of current military operations in the Eastern Gulf of Mexico and the potential effect of expanding oil and gas exploration east of the Military Mission Line:

1. Most, if not all, missile and target drone flight paths and intercepts in the Eastern Gulf of Mexico take place over the confines of two warning areas. These areas are being used most extensively (80 percent of scheduled hours) for training missions, while being used only intermittently for air-to-air or air-to-surface weapons testing. Total naval surface ship activity accounted for a total of just 20 vessel days of usage across all GOMEX OPAREAs.
2. Current military aircraft, ship and weapon performance parameters and projected future capabilities can be developed and tested in existing joint special use airspace and OPAREAs in the Gulf of Mexico.⁶⁷
3. The DoD 2009 Sustainable Range assessment repeatedly showed minimal impact to mission areas by encroachment, even in those areas in which there is already significant ongoing oil and natural gas exploration.
4. Military control agencies that are responsible for scheduling, coordinating, and monitoring surface and airborne operations within the confines of special use airspace and OPAREAs are capable of tracking commercial and civil aircraft and vessels by radar or communicating with the platforms via two-way radio.
5. To operate in special use airspace and OPAREAs concurrently with military units, commercial and civil entities must comply with applicable rules and regulations pursuant to agreements with appropriate military control agencies.⁶⁸
6. The services are assessing their training range requirements and are in search of innovative approaches to accommodating and managing oil and gas exploration in the Eastern Gulf of Mexico.⁶⁹

We contend, then, after reviewing the most recent DoD assessment of training operations,

⁶⁷ Federation of American Scientists, APG-63(V)3 and AIM-120 capabilities.

⁶⁸ DoI, MMS 2005-059, OCS Environmental Assessment.

⁶⁹ Emerald Coast Living and the CCC's interviews with representatives of DOD/Service Installations and Environment directorates.

Sustainable Range assessment data and environmental impact studies accomplished by DoD agencies and the services, that **previous assertions on the part of the Office of the Secretary of Defense and the services regarding civilian encroachment impinging on military ranges and readiness were, and continue to be, not credible, specifically in reference to the Eglin Water Test Areas and the Navy's GOMEX and Key West Range Complexes.**

We do not believe that current and future military testing and training requirements necessitate the maintenance of offshore areas in the Gulf of Mexico intended to exclude specific classes of commercial airborne, surface, or subsurface activities.

Therefore, after conducting extensive research on the issues and completing a thorough analysis of the data, it is our conclusion that opening further portions of the Gulf of Mexico east of the Military Mission Line to oil and gas field exploration and development will not come at the expense of feasibly, sufficiently, and adequately accomplishing military training and testing missions. We do not believe that expanding oil and gas exploration on the Outer Continental Shelf within the Gulf of Mexico and pursuing national security goals are mutually exclusive actions.

Annex A

TABLE AA. ESTIMATED OIL AND GAS RESERVES IN THE GULF OF MEXICO FOR 1,196 PROVED FIELDS AND 56 UNPROVED FIELDS BY AREA, DECEMBER 31, 2005⁷⁰

AREA(S) (Figs. 4,5, and 6)	Number of Fields						Proved Reserves		Cumulative Production through 2005		Remaining Proved Reserves		Unproved Reserves	
	Proved Active Prod	Proved Active Nonprod	Proved Expired Depleted	Unproved		Expired Nonprod	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
				Active	Studied									
	WESTERN PLANNING AREA													
Western Shelf														
Brazos	23	3	12	0	0	2	11	3,655	10	3,366	1	289	0	63
Galveston	20	4	22	0	0	3	68	2,174	53	1,924	15	250	0	48
High Island and Sabine Pass	73	10	43	1	1	8	393	15,289	373	14,671	20	618	9	287
Matagorda Island	23	0	5	0	0	3	24	5,175	23	4,941	1	234	1	377
Mustang Island	13	0	15	0	0	6	12	1,784	5	1,668	7	116	13	138
N. & S. Padre Island	7	1	6	0	0	0	0	590	0	515	0	75	0	8
Western Slope														
Alaminos Canyon	3	0	0	4	4	1	72	123	56	87	16	36	373	554
East Breaks	18	1	0	2	2	4	231	2,338	156	1,429	75	909	16	101
Garden Banks	27	3	3	4	4	4	654	3,840	453	2,922	201	918	173	629
Western Slope (Other)*	0	0	0	1	1	1	0	0	0	0	0	0	8	4
Western Planning Area Subtotal	207	22	106	12	12	32	1,465	34,968	1,129	31,523	336	3,445	593	2,209
CENTRAL PLANNING AREA														
Central Shelf														
Chandeleur	6	3	3	0	0	0	0	367	0	347	0	20	0	4
East Cameron	44	10	12	0	0	0	356	10,883	321	10,338	35	545	4	127
Eugene Island	71	5	10	0	0	6	1,631	19,223	1,571	18,608	60	615	36	249
Grand Isle	13	3	5	0	0	1	975	4,807	947	4,613	28	194	19	111
Main Pass and Breton Sound	59	7	17	0	0	6	1,109	6,589	1,012	6,065	97	524	6	34
Mobile	19	3	5	0	0	4	0	2,157	0	1,778	0	379	0	127
Ship Shoal	50	3	10	1	0	4	1,382	12,095	1,325	11,566	57	529	21	178
South Marsh Island	38	7	6	0	0	0	939	14,368	856	13,612	83	756	14	277
South Pass	8	3	2	0	0	1	1,075	4,334	1,048	4,198	27	136	2	71
South Pelto	9	0	0	0	0	0	157	1,151	146	1,036	11	115	4	14
South Timbalier	47	3	8	2	2	2	1,611	10,487	1,468	9,218	143	1,269	33	367
Vermilion	62	6	17	0	0	1	572	16,573	521	15,717	51	856	18	318
Viosca Knoll (Shelf)	14	1	13	4	4	1	12	461	11	399	1	62	0	18
West Cameron and Sabine Pass	80	9	24	1	1	1	220	20,712	199	19,130	21	1,582	10	379
West Delta	20	1	3	0	0	3	1,372	5,503	1,338	5,265	34	238	11	76
Central Slope														
Ewing Bank	14	1	0	1	1	2	331	532	229	359	102	173	53	104
Green Canyon	28	6	2	9	9	16	2,478	3,635	766	2,063	1,712	1,572	740	587
Mississippi Canyon	30	9	1	10	10	8	3,528	8,956	1,325	5,555	2,203	3,401	651	1,935
Viosca Knoll (Slope)	18	1	1	2	2	3	510	2,864	373	2,214	137	650	86	194
Atwater Valley	0	4	0	4	4	3	48	404	0	0	48	404	76	152
Central Slope (Other)**	1	0	0	6	6	0	29	173	26	154	3	19	850	163
Central Planning Area Subtotal	631	85	139	40	39	62	18,335	146,274	13,482	132,235	4,853	14,039	2,634	5,485
EASTERN PLANNING AREA														
Eastern Planning Area Subtotal***	2	4	0	4	4	2	1	542	0	88	1	454	0	703
GOM TOTAL	840	111	245	56	55	96	19,801	181,784	14,611	163,846	5,190	17,938	3,227	8,397
	1,196													

* Western Slope (Other) includes Corpus Christi, Keathley Canyon, and Port Isabel.

** Central Slope (Other) includes Lund and Walker Ridge.

*** Eastern Planning Area includes DeSoto Canyon, Destin Dome, Lloyd Ridge, and others.

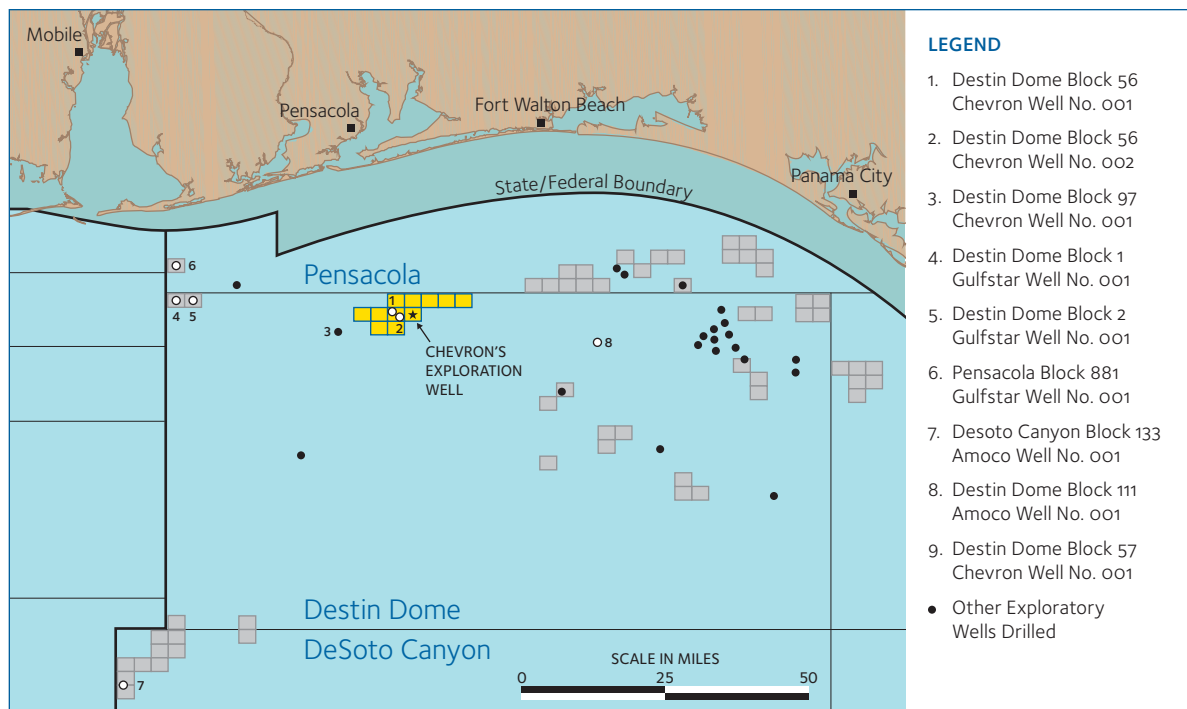
(Reserves: oil expressed in millions of barrels at 60°F and 1 atmosphere; gas in billions of cubic feet at 60°F and 15.025 psia)

70 Department of the Interior, OCS Report MMS 2009-022, "Estimated Oil and Gas Reserves in the Gulf of Mexico," December 31, 2005, May 2009, <http://www.gomr.mms.gov/PDFs/2009/2009-022.pdf> accessed 13 August 09.

TABLE AB. EASTERN GULF OIL AND GAS FIELD DISCOVERIES⁷¹

AREA/BLOCK	WELL NO.	DATE DRILLED	OPERATOR	COMMENTS
Destin Dome 160	001	01/85	Shell	first Eastern Gulf discovery (oil); lease relinquished in January 1990
Pensacola 948	001	02/85	Sohio	gas/condensate pay discovered; lease expired in July 1996
Pensacola 948	002	06/87	Tenneco	gas/condensate pay discovered (see Pensacola 948 above)
Destin Dome 111	001	06/87	Amoco	oil pay discovered; lease relinquished in January 1994
Destin Dome 56	001	06/87	Chevron	Norphlet dry natural gas discovered; development plan filed; DD56 Unit
Pensacola 996	001	04/88	Texaco	oil pay discovered; lease expired
Destin Dome 56	002	10/89	Chevron	Norphlet dry natural gas discovered; development plan filed; DD56 Unit
Destin Dome 1	001	01/89	Gulfstar	natural gas; Miocene sands; production pending
Destin Dome 2	001	01/89	Gulfstar	natural gas; Miocene sands; production pending
Pensacola 881	001	01/89	Gulfstar	natural gas; Miocene sands; production pending
Desoto Canyon 133	001	02/93	Amoco	successful test of Miocene gas sands; production pending
Destin Dome 57	001	11/95	Chevron	Norphlet dry natural gas; 41 million cubic ft. per day; development plan filed; DD56 Unit
Desoto Canyon 177	001	02/97	Amoco	successful test; Miocene gas sands; production pending
Lloyd Ridge 50	001	05/03	Anadarko	natural gas sands
Desoto Canyon 269	001	06/03	Shell	
Desoto Canyon 621	001	10/03	Anadarko	targeted middle Miocene sands
Lloyd Ridge 5	001	12/03	Anadarko	
Desoto Canyon 618	001	04/04	Dominion	natural gas sands
Lloyd Ridge 1 & 2	001	12/04	Murphy	natural gas sands

FIGURE A1. PAST OFFSHORE DRILLING ACTIVITY IN THE FLORIDA PANHANDLE REGION⁷²



71 MMS, Eastern Gulf of Mexico Overview, <http://www.gomr.mms.gov/homepg/offshore/egom/activity.html#egom> drilling activities, accessed 3 September 09

72 MMS, Eastern Gulf of Mexico Overview, <http://www.gomr.mms.gov/homepg/offshore/egom/fladrl.html> accessed 3 September 09.

FIGURE A2. DOD SRI CAPABILITIES ASSESSMENT ATTRIBUTES⁷³

The following 13 common capability attributes were developed and identified by the services for the 2008 assessment and reporting process:

1. **Landspace** Physical land area that has the necessary features such as topography, vegetative cover, configuration, proximity, capacity, usability, acreage, etc.
2. **Airspace** Physical volume of airspace that has the necessary features such as types of use, configuration, proximity, capacity, amount, etc.
3. **Seaspace** Physical sea-surface area that has the necessary features such as types of use, configuration, proximity, capacity, amount, etc.
4. **Underseaspace** Physical volume of underseaspace that has the necessary features such as ocean bottom type, depth, types of use, configuration, proximity, capacity, amount, etc.
5. **Targets** Various land, air, sea, and undersea presentations designed for live or simulated weapons engagement.
6. **Threats** Various physical and simulated threat presentations such as emitters, opposing adversary forces, battlefield effects simulators, etc.
7. **Scoring and Feedback Systems** Equipment that provides information for training event reconstruction, debriefing, and replay, whether virtual or live, through the collection and storage of time and space position information (TSPI), weapons accuracy, systems and operator accuracy, assessment and monitoring of operator performance, and C41 network information flow.
8. **Infrastructure** Buildings, structures, or linear structures (e.g. roads, rail lines, pipelines, fences, pavement).
9. **Range Support** Personnel, software, and hardware that support daily range operations, maintenance (including range clearance), communication networks for command and control, scheduling, and range safety as examples. Communications networks include inter- and intra-range systems point-to-point; range support networks; fiber optic and microwave backbones; information protection systems such as encryption, and radio, data link; and instrumentation frequency management systems.
10. **Small Arms Ranges** Small arms refer to ranges that accommodate weapons systems that fire rounds up through 40mm which is dud-producing.

73 DoD 2009 Report to Congress, pg 20-23.

11. **Collective Ranges** Collective refers to ranges that provide proficiency at the team or unit level for battlefield operations.
12. **MOUT Facilities** Military Operations in Urban Terrain (MOUT) facilities refer to terrain complexes that replicate urban environments.
13. **Suite of Ranges** The Suite of Ranges is a nominal make-up of range attributes and is intended to provide the baseline requirement for each level of training. The elements include various types of ranges such as maneuver/training area, impact areas, live-fire ranges, aviation ranges, and MOUT complexes that must be coordinated to conduct required training events.

Service-specific mission areas (as listed in Chapter 2, and defined in Appendix B) were assessed and evaluated against the 13 capability attributes using a color rating scheme. These assessments were based on range usage with regards to accessibility and usability during normal operations using the following rating scale:

- **Red** The range is not mission capable. It is unable to support required training tasks for a given mission area to prescribed doctrinal standards and conditions.
- **Yellow** The range is partially mission capable. It can partially support required training tasks for a given mission area to prescribed doctrinal standards and conditions, resulting in marginalized training for the range users.
- **Green** The range is fully mission capable. It can support required training tasks for a given mission area to prescribed doctrinal standards and conditions.
- **White (Blank)** White or blank represents the situation where an assessment for a given mission area is not performed against a particular attribute.

This scale is consistent with the developing standards within the Defense Readiness Reporting System (DRRS), where “red” means the assigned mission cannot be achieved, “yellow” means the mission can be achieved but there is greater risk, and “green” means the assigned mission can be achieved.

FIGURE A3. DOD SRI ENCROACHMENT ASSESSMENT ATTRIBUTES⁷⁴

The impact of encroachment on mission readiness is difficult to assess because of the flexibility in training operations and associated resources. This flexibility is necessary to allow the services' operational forces to adapt to real-time operational constraints. To achieve their mission training requirements, the services employ workarounds that have the potential to increase mission risk due to unrealistic, segmented, or irrelevant training, and can possibly result in a deterioration of training content and/or quality. It is important to understand that encroachment promotes workarounds, workarounds increase mission risk, and mission risk can build over time before a specific mission failure is evident. Therefore, as part of DoD's efforts to standardize the assessment of encroachment on training ranges, the services were tasked to assess the impact of the following 12 encroachment factors in terms of mission risk, against their service mission areas (as listed in Chapter 2, and defined in Appendix B).

1. **Threatened & Endangered Species/Critical Habitat** Constraints placed on training due to regulatory requirements and/or service guidance to manage at risk, threatened, or endangered species or associated habitat.
2. **Munitions Restrictions** Constraints placed on training due to regulatory requirements and/or service guidance on munitions use, munitions constituents, or residue to include range clearance.
3. **Spectrum** Constraints placed on training due to unavailability of, or interference with, required electromagnetic spectrum.
4. **Maritime Sustainability** Constraints placed on training due to regulatory requirements and/or service guidance to protect and sustain the maritime environment. This includes sonar issues.
5. **Airspace** Constraints placed on training due to the availability of airspace; these constraints may be spatial or temporal.
6. **Air Quality** Constraints placed on training due to regulatory requirements and/or service guidance to maintain air quality.
7. **Noise Restrictions** Constraints placed on training as a result of mitigation measures for unwanted sound generated from the operation of military weapons or weapon systems that affects either people, animals (domestic or wild), or structures on or in proximity to military training areas. This does not include occupational noise exposure or underwater sound.
8. **Adjacent Land Use** Constraints placed on training due to incompatible development in proximity to military training areas.

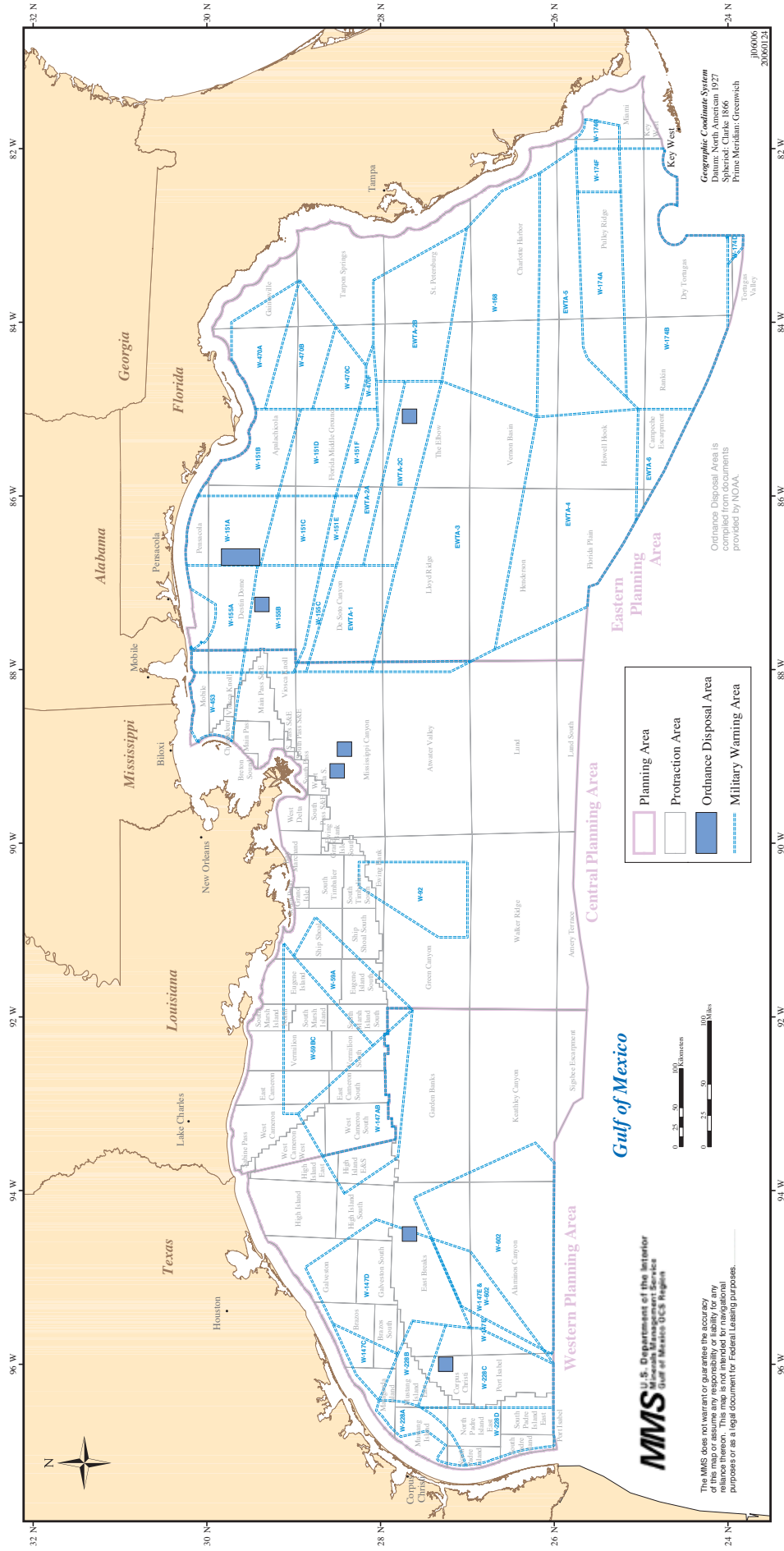
⁷⁴ Ibid.

9. **Cultural Resources** Constraints placed on training due to legal and/or regulatory requirements and/or service guidance to manage and maintain cultural resources.
10. **Water Quality/Supply** Constraints placed on training due to legal and/or regulatory requirements and/or service guidance to manage water quality and supply.
11. **Wetlands** Constraints placed on training due to legal and/or regulatory requirements and/or service guidance to manage wetlands.
12. **Range Transients** Constraints placed on training due to the unannounced or unauthorized presence of individuals, livestock, aircraft, or watercraft transiting ranges.

Services assessed the ranges/range complex for the risks associated with actual restrictions and workarounds related to the various Encroachment Factors presented earlier. These assessments were made based on observed use of the range with regards to availability using the following rating scale:

- **Red** The encroachment factor has a severe effect, or high risk, to the range's ability to support its assigned mission training and would likely cause the training mission to fail. Mitigating the encroachment would involve prohibitive costs or actions for the range.
- **Yellow** The encroachment factor has a moderate impact, or medium risk, on the range's ability to support its assigned mission training. Workarounds have a moderate impact on training content, procedure, or outcome. Addressing the encroachment results in additional burdens or requires additional actions by the range to mitigate the impact of the encroachment.
- **Green** The encroachment factor has minimal impact, or low risk, on the range's ability to support its assigned mission training. Workarounds detract minimally or not at all from training content, procedure, or outcome. Costs are not incurred by the range or range users to address the encroachment factor.
- **White (Blank)** White or blank represents the situation where an encroachment factor does not exist for a given mission area.

FIGURE 2. GOMEX OIL AND GAS EXPLORATION FIELDS AND MILITARY SPECIAL USE AIRSPACE AND SURFACE OPAREAS⁷⁵



75 MMS Gulf of Mexico Ordnance Disposal Areas, <http://www.gomr.mms.gov/homepg/regulate/enviro/j106006.pdf> accessed 3 August 09.

