Executive Summary

In this continuation of research originally performed in support of Institute for Defense Analyses (IDA) Paper P-8177,[1] IDA analyzes data associated with Operation Enduring Freedom (OEF) in Afghanistan. The Reserve Forces Policy Board (RFPB) tasked IDA to assess Reserve Component (RC) operational performance in the OEF campaign from the years 2001 to 2014. Assessments followed three primary lines of research inquiry: analysis of mission report (MISREP) data from the combined air operations center (CAOC), analysis of Army and Marine Corps significant activity reports (SIGACTs), and interrogation of interviews (archived interviews and those conducted by IDA) of participants in the campaign and leaders responsible for the various processes required to conduct and sustain OEF. To the extent possible, IDA was to again quantify RC performance and to conduct comparative analyses between active component (AC) and RC forces. IDA was also asked to comment on any institutional adaptations conducted in response to the OEF campaign as they pertained to the mobilization and employment of the RCs. Since analysis of air mobility data was conducted in the earlier research, it was not necessary to conduct additional analysis on these data because there was no statistically significant difference between AC and RC operational performance in this particular mission area.

Background

Before the commencement of OEF, U.S. armed forces, including members and units from the RCs, were already committed to operations at home and abroad in support of the combatant commands (CCMDs). These operations included maintaining no-fly zones in Iraq and continuing peacekeeping operations in the Balkans and the Sinai Peninsula. Following the terrorist attacks of September 2001, RC forces were also employed to conduct Operation Noble Eagle (ONE) and to provide additional installation and airport security. With the commencement of OEF and subsequently Operation Iraqi Freedom (OIF) in 2003, the Nation would witness and sustain some of the largest mobilizations and deployments of RC forces in decades.

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[1] Joseph Adams et al., *Sharing the Burden and Risk: An Operational Assessment of the Reserve Components in Operation Iraqi Freedom*, IDA Paper P-8177 (Alexandria, VA: Institute for Defense Analyses, October 2016).

Research Methodology

Since IDA had already obtained the SIGACT and MISREP data for the OIF and the OEF campaigns during research in support of IDA Paper P-8177,[2] analyses of these data began immediately upon project initiation. IDA had also discerned that a Department-wide repository of unit operational performance data was not available, so efforts focused on obtaining any OEF-related archived transcripts and any Defense Manpower Data Center (DMDC) data that depicted personnel deployed in support of OEF over time and any casualties sustained. IDA would also interrogate transcripts and interviews already captured during the previous effort.[3] Following a review of the literature, IDA identified additional individuals who would be approached to be research participants, based on their roles in the OEF campaign (distinct from roles in OIF or in institutional roles). These individuals were AC and RC leaders who represented aviation, logistics, special operations forces (SOF), personnel support functions, force management operations, ministerial advisors, security force trainers, and members of the Pakistan-Afghanistan Coordination Cell (PACC) and the Afghanistan-Pakistan Hands Program (AFPAK Hands). IDA also identified, invited, and interviewed government civilians who represented Department of State perspectives.

Data Extracts

With the commencement of this research effort, IDA again queried the DMDC to obtain a data extract of the Contingency Tracking System (CTS) personnel deployment file, which would identify monthly armed forces deployments (i.e., Air Force, Army, Coast Guard, Marine Corps, and Navy) by component to the OEF campaign from September 2001 through December 2014. These data would answer questions related to who served in OEF during what time periods by component. Deployments to OEF included not only Afghanistan and Pakistan, but also Kazakhstan, Kyrgyzstan-Uzbekistan, and Tajikistan. These data would again serve as denominators when considering rates associated with performance and levels of effort.

Other Sources of Data

In addition to the DMDC personnel deployment and casualty data, IDA used the following sources of data for analysis:

- The SIGACT database from OEF;
- Theater History of Operations Reports (THOR)/MISREP analysis tool for OEF;

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[2] Ibid.

[3] Ibid.

- Archived histories, testimonies, interviews, after action reports, surveys, and lessons learned;
- Other studies conducted by research organizations;
- Archived Combat Studies Institute (CSI) interview transcripts; and
- IDA-conducted interviews.

Archived interviews, such as those obtained from CSI, were conducted for the record and are attributable. To solicit key insights regarding OEF operational performance, all of the IDA-conducted interviews were recorded in a "not-for-attribution" format. Transcripts of the interviews were qualitatively coded using NVivo software so that IDA could observe emerging themes and confirm what was being observed via other data sources.

Findings

Analysis of Aggregated Tactical Level Data Depicted No Sizeable Differences between AC and RC Forces in Measurable Metrics

Analyses of SIGACTs and air strikes depict that RC forces were doing exactly what they were being tasked to do, without sizeable differences in performance from that of their AC counterparts. These analyses are consistent with the assessments of OIF data, which also considered mobility data, and depicted no statistically significant differences in operational performance. Analyses continue to depict a shared burden and shared risk between AC and RC forces in these two operational campaigns.

Leaders Were Generally Pleased with RC Contributions and Performance in Support of OEF

Like the operational assessments of OIF, RC contributions and performance met the intent of leaders at the strategic and operational levels in OEF. In this current assessment, comments recognize that leaders were also pleased with RC contributions at the tactical level, with little or no difference from AC counterparts. Again, research participants highlighted that without significant contributions of RC forces, the Nation could not have conducted the long OEF/OIF/OND campaigns and other global commitments while still preserving the all-volunteer force (AVF).

DOD Was Not Well Prepared for Large-Scale Mobilizations

Research participants and archived interviews described how mobilization challenges did not occur during OEF until the large-scale mobilizations demanded by the OIF campaign. As highlighted by OIF study participants, general knowledge regarding the use of RC forces, including mobilization authorities, was initially lacking but that knowledge improved over the years of the OIF and OEF campaigns.

The Operational Environment and Pre-Deployment Training Was a Concern for the AC and the RC; Equipment Shortages Were a Concern for the RC

Research participants and archived interviews described the concerns of AC and RC forces related to the OEF operational environment and how pre-deployment training did not necessarily prepare forces for this unique environment. In general, the expressed sentiment was that the preparation of forces to fulfill special capabilities (e.g., female engagement teams, PRTs, and ADTs) was generally deemed inadequate. These capabilities did not reside in the force, doctrine did not exist regarding the creation and training of these capabilities, and these capabilities had to be created in an ad hoc manner. When one focuses on the preparation of the RC force (e.g., in IDA's previous work looking at the management of regionally oriented organizations and individuals), the extent to which any specialized training (e.g., foreign language) was made available to members of the RC was undetermined since these opportunities were usually only made available to the RC when AC training slots were not filled.[4] As previously identified in the OIF study, equipment shortages were a concern for mobilizing and deploying RC forces, and these shortages limited the training time and exposure to the systems being employed by the AC.

Relationships between the AC and the RC Mattered

According to research participants and archived materials, individuals and organizations from the RC were purposefully selected and employed during OEF and OIF. Lack of component familiarity arose as a discussion point, particularly as it related to the earlier years of the OEF campaign. As relationships between members of different components developed over the years due to training and repeated deployments, one no longer saw the subject of component familiarity surface during interviews. "Indistinguishable" became the expressed sentiment between components.

Operational Performance Data Was Not Systematically Collected and Archived DOD-Wide

As highlighted in the OIF study, IDA had to use a variety of data from disparate sources to approach the question regarding RC operational effectiveness in OEF. While sources would indicate that some of these data were collected at various times, IDA could not find a central repository or organization that maintained operational performance data of the OEF campaign. Therefore, IDA had to rely on SIGACTs, air strike data, and interviews (whether archived or conducted by IDA analysts).

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[4] Joseph F. Adams et al., *Enhancing and Managing Regionally Oriented Individuals and Organizations*, IDA Paper P-5161 (Alexandria, VA: Institute for Defense Analyses, June 2014).

Recommendations

Use of RC Forces Should be a Major Topic of Service and Joint Professional Military Education (JPME)

As highlighted in the OIF paper, DOD conducts operations as a joint, combined, total force. Therefore, all military leaders should have more than just a basic knowledge of mobilization authorities and duty statuses for the RCs of all Services and the benefits and limitations associated with each. For OEF, DOD also operated as part of a NATO force, so knowledge on the employment of all forces, including RC forces, merit significant discussion during JPME, especially when research participants highlighted concerns regarding component familiarity during the early years of OEF.

Infrastructure Readiness for Mobilizations Should be Reported to the Extent Possible

While not necessarily highlighted during the early phases of OEF, DOD was not well prepared for the large-scale mobilizations required to commence and sustain OIF. DOD should have informed knowledge regarding its ability to conduct large-scale mobilizations and the risks associated with these operations. Therefore, DOD should establish policy and incorporate it into readiness reporting systems.

DOD Should Prioritize All Opportunities for AC and RC Engagement and Exercise Mobilizations to Promote Greater Trust and Confidence Across All Components

Years of mobilization and deployment institutionally addressed any component familiarity concerns, but, without such mobilizations, DOD risks having a future generation of leaders who lack component familiarity. JPME, Professional Military Education (PME), exercises, training center rotations, and current operations should involve a heavy mix of AC and RC leader representation. In the absence of mobilizations and deployments, DOD should institutionalize exercise mobilizations that will educate, train, and assess mobilization procedures and policy.

To the Extent Possible, RC Forces Should Have Opportunities for the Same Training and the Same Systems and Equipment as Their AC Counterparts

The sentiments of the AC and RC members reflected concern over pre-deployment training for the OEF operational environment. Therefore, to the extent possible, whatever training opportunities are afforded to the AC should also be afforded to the RC. In addition, to the extent possible, RC forces should have the same equipment and systems as their AC counterparts for training and knowledge development. Training with the same equipment and systems would enable more effective and more efficient integration and operational use of RC capabilities.

DOD Should Ensure That Operational Performance Assessments for All Operations Are Captured and Maintained by the Joint Staff

As highlighted during the OIF research, capturing these data during operations, as stated in joint doctrine, will permit objective, quantitative assessments of performance and, perhaps, provide additional information that is useful for joint operational planning.

Contents

1. Introduction

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1. Data Extracts

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Figure 1 depicts OEF military personnel strength as a percentage of the total deployed force by component.

Figure 2 through Figure 5 depict personnel strength as a percentage of the total force deployed broken out by Service and component.

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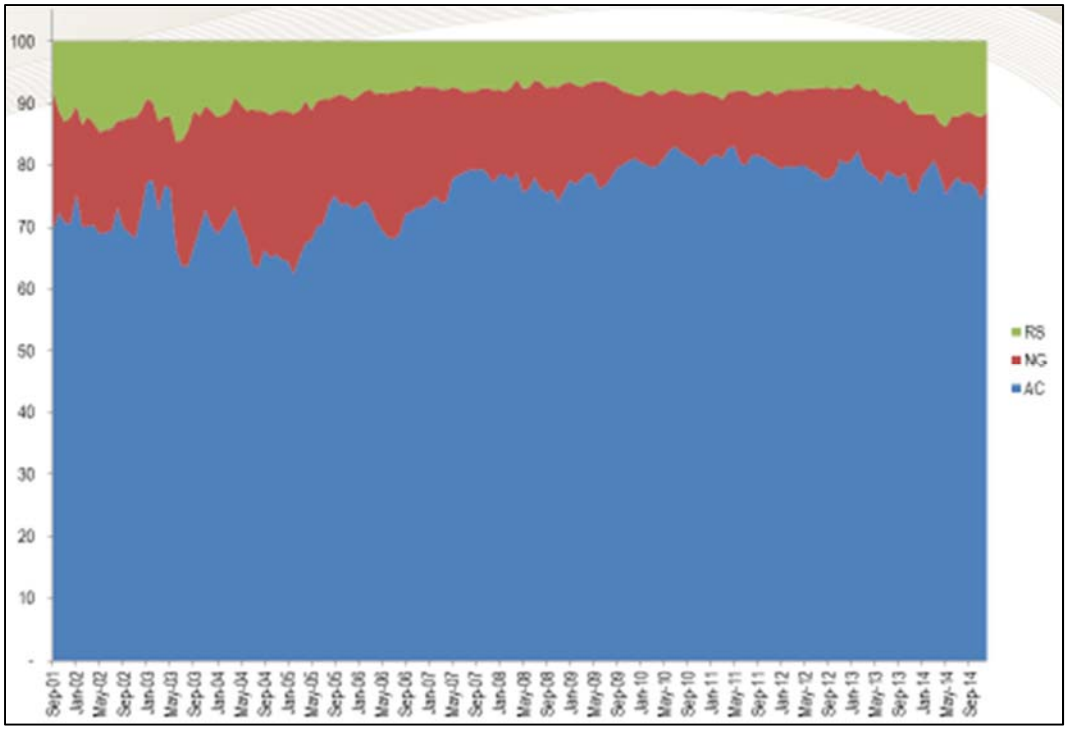
[2] Ibid.

[3] Ibid.



Source: DMDC Data Extract.

Note: RS = Service members from the Federal reserves; NG = National Guard.

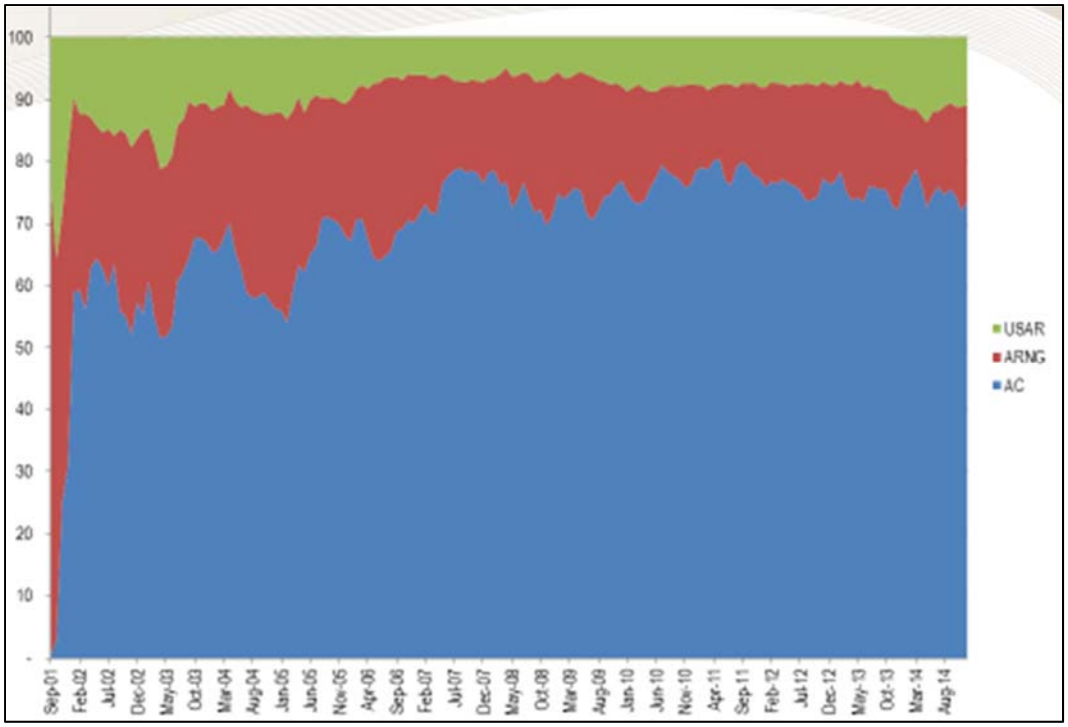
Figure 1. OEF Military Personnel Strength by Percentage of Component

Figure 2 shows that from September 2001 to December 2014, the Army National Guard (ARNG) and the United States Army Reserve (USAR) represented roughly 30% of the Army's deployed force in OEF. The USAR at times peaked at more than 40%.

Figure 3 shows that over the same 2001 to 2014 period, the United States Air Force Reserve (USAFR) and the Air National Guard (ANG) represented approximately 25% of the Air Force's deployed force in OEF. The ANG peaked at higher levels during the initial creation of the air bridge to get forces and equipment into Afghanistan and during select other periods.

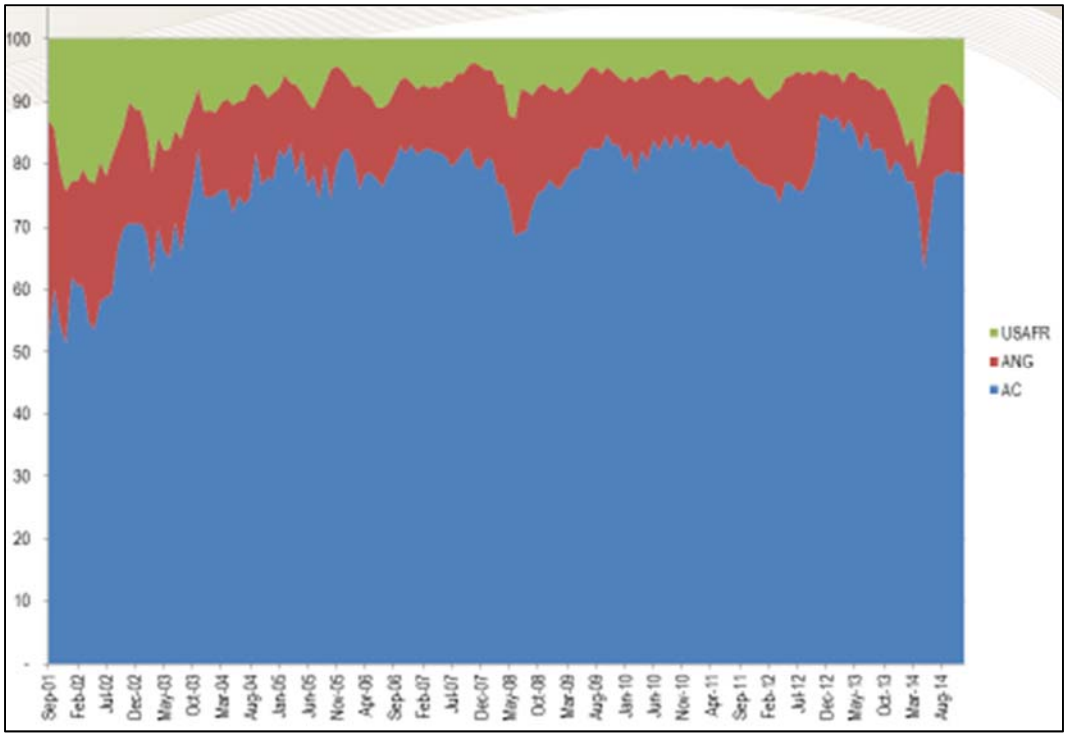
Figure 4 shows that ashore, the United States Navy Reserve (USNR) averaged approximately 20% of the total deployed Navy force. The USNR spiked at much higher levels, representing as much as 40 and 50% of the deployed Navy force as the OEF campaign continued into 2013 and 2014.

Figure 5 shows that the United States Marine Corps Reserve (USMCR) represented slightly less than 10% of the average total Marine Corps force deployed in support of OEF. The USMCR spiked during initial operations in the campaign.



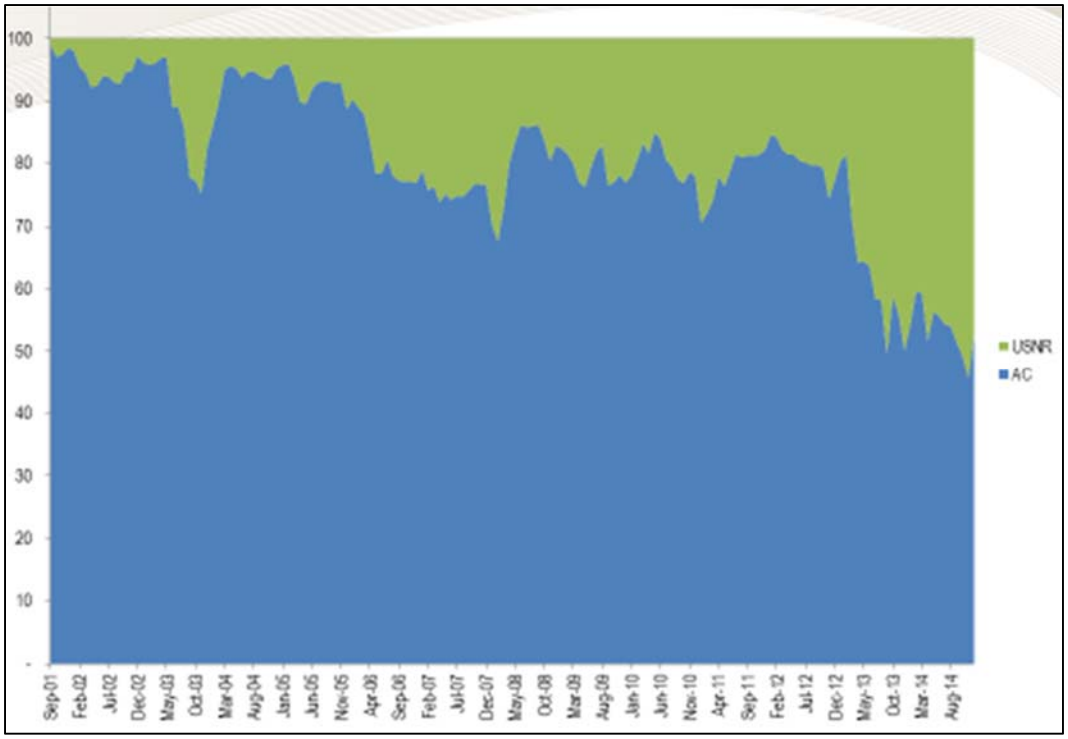
Source: DMDC Data Extract.

Figure 2. OEF Military Personnel Strength by Percentage of Army Component



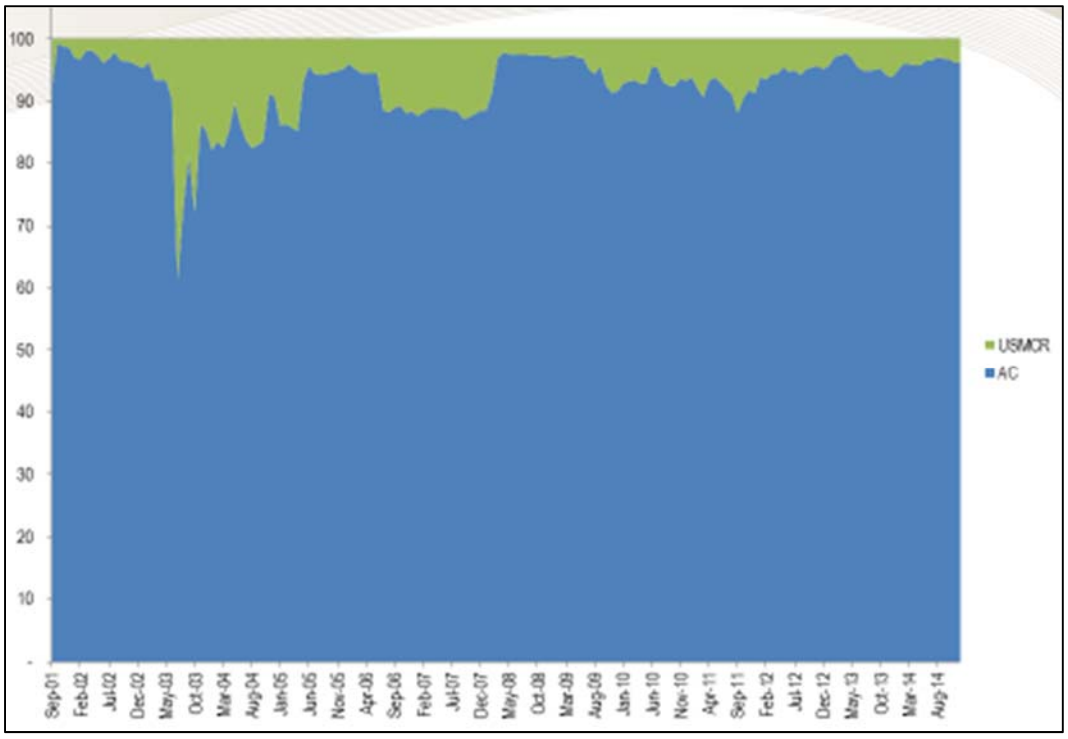
Source: DMDC Data Extract.

Figure 3. OEF Military Personnel Strength by Percentage of Air Force Component



Source: DMDC Data Extract.

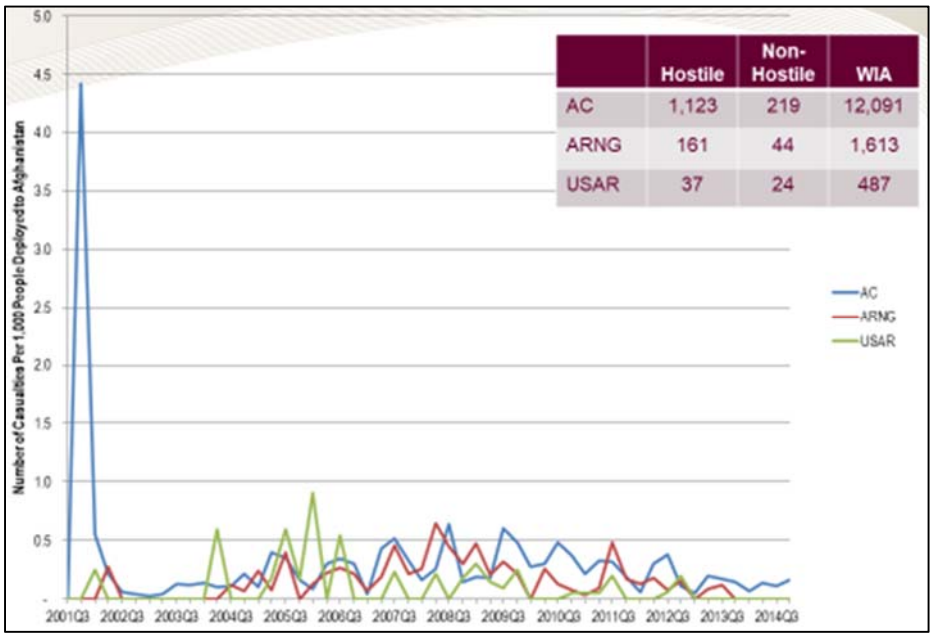
Figure 4. OEF Military Personnel Strength by Percentage of Navy Component



Source: DMDC Data Extract.

Figure 5. OEF Military Personnel Strength by Percentage of Marine Corps Component

Combining these DMDC-deployed personnel extracts with data from the Defense Casualty Analysis System (DCAS) obtained in October 2016, IDA computed casualty rates by Service and component during the OEF campaign. These data do not represent performance data but do indicate a level of shared risk and responsibility associated with the execution of the OEF mission. Beginning with the Army (see Figure 6), one can see how casualty rates unfolded over the multi-year campaign by component (hostile fire deaths, non-hostile fire deaths, and wounded in action (WIA)).



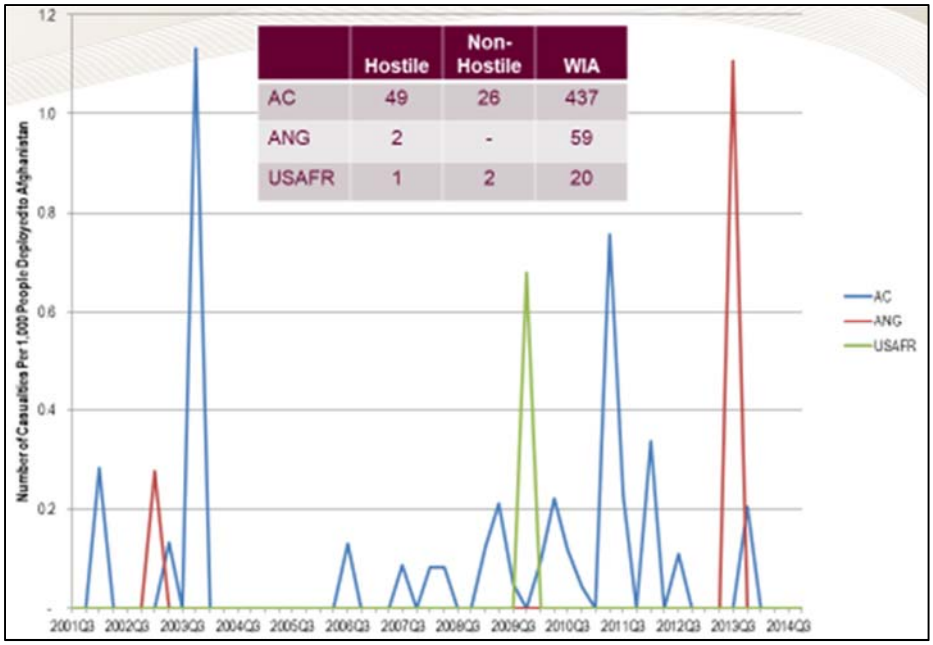
	Hostile	Non-Hostile	WIA
AC	1,123	219	12,091
ARNG	161	44	1,613
USAR	37	24	487

Source: DMDC Data Extract.

Figure 6. OEF Hostile Casualty Rates in Afghanistan by Army Component

For Army casualties, except for the initial spike associated with the commencement of the OEF campaign, casualties rates per 1,000 deployed personnel were shared at various rates across all components of the total Army force during the subsequent years.

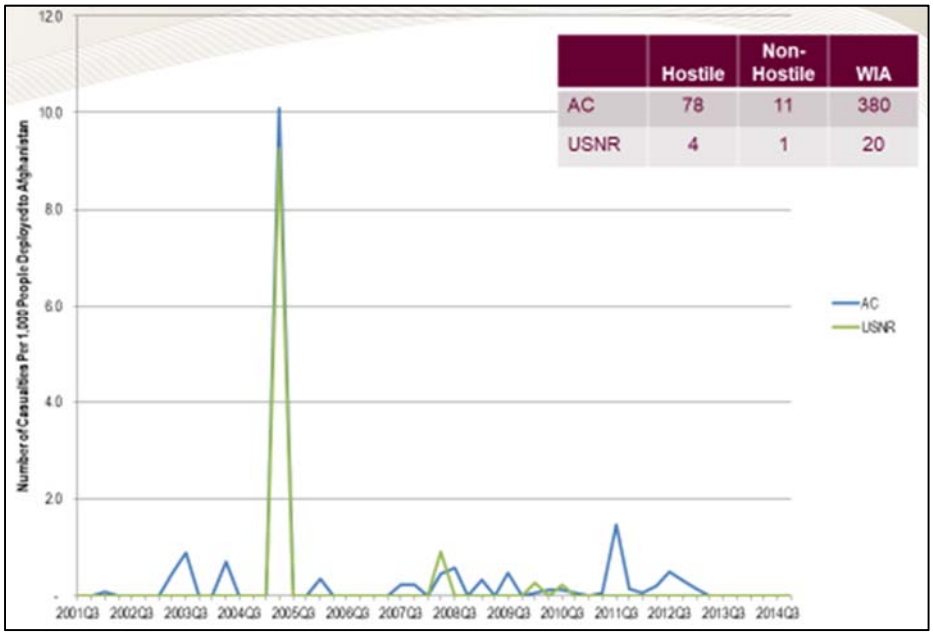
Air Force casualty rates (see Figure 7) varied widely by component throughout the 2001 to 2014 OEF period of analysis compared to what was observed from the components of the Army (see Figure 6).



Source: DMDC Data Extract.

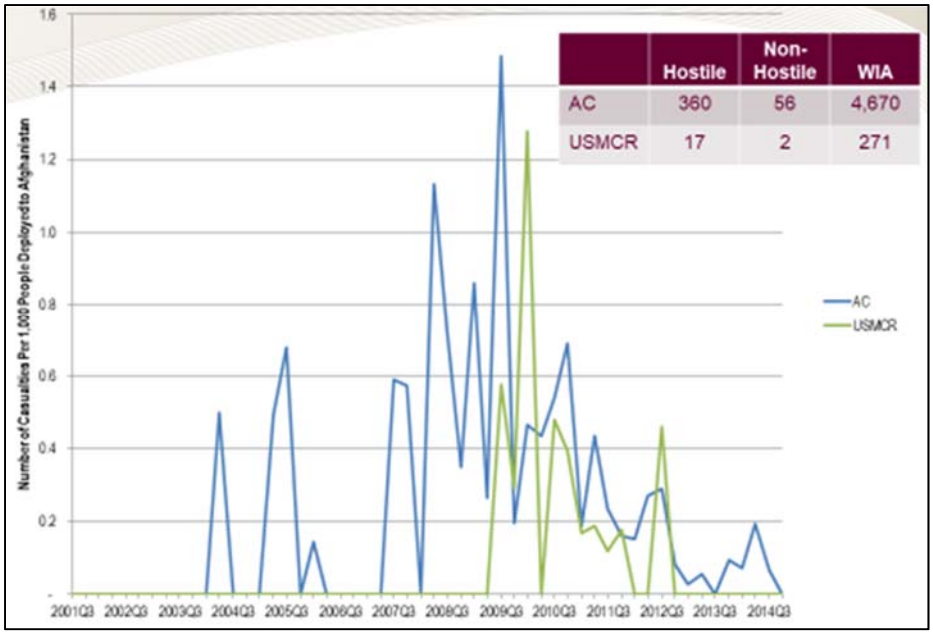
Figure 7. OEF Hostile Casualty Rates in Afghanistan by Air Force Component

Figure 8 and Figure 9 Navy and Marine Corps casualty rates in Afghanistan. Again, while these data are not performance data, they provide a basis for rate computations when considering measures of interest (MOI) related to SIGACTs. MOI are computed for enemy- and non-enemy-initiated activities for Navy and Marine Corps ACs and RCs.



Source: DMDC Data Extract.

Figure 8. OEF Hostile Casualty Rates in Afghanistan by Navy Component



Source: DMDC Data Extract.

Figure 9. OEF Hostile Casualty Rates in Afghanistan by Marine Corps Component

2. Other Sources of Data

In addition to the DMDC personnel deployment and casualty data, IDA used the following sources of data for analysis:

- The SIGACT database from OEF;
- Theater History of Operations Reports (THOR)/MISREP analysis tool for OEF;
- Archived histories, testimonies, interviews, after action reports, surveys, and lessons learned;
- Other studies conducted by research organizations;
- Archived Combat Studies Institute (CSI) interview transcripts; and
- IDA-conducted interviews.

Archived interviews, such as those obtained from CSI, were conducted for the record and are attributable. To solicit key insights regarding OEF operational performance, all of the IDA-conducted interviews were recorded in a "not-for-attribution" format. Transcripts of the interviews were qualitatively coded using NVivo software so that IDA could observe emerging themes and confirm what was being observed via other data sources.

C. Paper Overview

In the subsequent chapters, IDA presents analyses associated with data sources along the primary lines of the research effort. This paper consists of five chapters:

- Introduction (a summary of the background and methodology) (Chapter 1),
- SIGACTs Data Assessments (Chapter 2),
- Air Strike Data and Assessment (Chapter 3),
- Assessments Based on Interview Interrogation Reserves (Chapter 4), and
- Research Findings and Recommendations (Chapter 5).

A list of research participants can be found in Appendix A. Since the SIGACTs data and the THOR aviation strike data are classified, a complete write-up of these assessments is included in a separate, classified appendix.

2. SIGACT Data Assessment

A. Introduction

Following completion of the SIGACT-based analysis for the RFPB in support of the performance assessment of RC forces during OIF and Operation New Dawn (OND), IDA researchers conducted a similar review of the SIGACT reports that were compiled during OEF in Afghanistan.[4]

The SIGACT database for the periods considered in Afghanistan contains fewer than 300,000 entries—not as many as the more than 450,000 entries considered in Iraq but certainly sufficient for analysis. Like the OIF/OND entries, each entry offers substantial information focused on the "what, where, when, who, and how" of enemy-initiated attacks (EIAs) and other important incidents that affected friendly forces and the civilians who were in harm's way because of insurgent actions.

The SIGACTs work for this effort built upon what had been identified and analyzed in earlier projects.[5] Table 1 shows how many SIGACT reports were considered for the previous and current analyses in support of the RFPB. Recall that SIGACT entries were only used if they could be positively identified as being attributable by Service and component (not always possible since reporting units sometimes underidentified who they were).

Per Table 1, it is apparent that fewer Afghan reports were attributable to AC or RC forces and that RC reporting proportions were also lower. There are several reasons for these differences. As stated previously, OEF had considerably fewer SIGACT entries. Not

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4 IDA researchers have more than a decade's worth of experience analyzing SIGACT data from Iraq and Afghanistan while deployed in theaters and at IDA's Systems and Analyses Center (SAC) in Alexandria, Virginia. For more than 5 years at the height of operations in both theaters, IDA also maintained and updated the official versions of the then Joint Improvised Explosive Device Defeat Organization's (JIEDDO) SIGACT databases. Many of the researchers who were previously involved in SIGACTs work also participated in this effort.

5 To better understand how successive SIGACTs analyses relate to one another, see Richard B. Polin et al., *Comparative Analysis of Active and Reserve Component Forces in Recent Overseas Contingency Operations*, IDA Document D-5291 (Alexandria, VA, October 2014), SECRET//REL TO USA, AUS, CAN, GBR; Adams et al., *Sharing the Burden and Risk*, classified appendix, SECRET.

Table 1. Army and Marine SIGACT Reporting

	SIGACT Reports	
Service/Component	**Iraq**	**Afghanistan**
Army AC	146,000	54,000
Army RC	26,000	4,000
Marine AC	33,000	25,000
Marine RC	4,000	<1,000
Total	**209,000**	**>83,000**

only were there fewer U.S. forces in Afghanistan to attract EIA and non-EIA events,[6] but the concept of "fighting" and "non-fighting" seasons was real and resulted in greatly reduced reporting in most areas each year from late fall through early spring. No such comparable seasonal adjustments were made in Iraq. Regarding the lower RC proportions, fewer Army RC brigade combat teams (BCTs) were used in full-spectrum operations (FSO) roles in Afghanistan. Since the Army's transformation from brigades to BCTs was completed before the Afghan force build-up, more AC BCTs were available for FSO in Afghanistan (and we know that FSO units generated more SIGACT reporting than units in non-FSO roles). The sequential nature to resourcing the two theaters will become more evident in the next section.

B. Inter-Theater Comparisons

Before taking a more detailed look at the aggregated and exemplar unit SIGACT reports generated by AC and RC Army and Marine forces, several comparisons of the levels, flow, types, and targets of violence in the two theaters can offer important context.

The classified appendix to this paper depicts the level and flow of all SIGACT-based EIA activity in Afghanistan and Iraq from 2003 through 2013, as follows:

- The Iraq portion of the graph is characterized as a roughly "bell-shaped" curve. Following major combat operations in early 2003, insurgent and ethnic violence increased through the end of 2006, at which time the United States concurrently applied a new counterinsurgency strategy and additional resources. By the second half of 2007, a country-wide "tipping point" in the violence was achieved, especially due to coalition progress in al-Anbar Province and Baghdad.

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6 Major EIA types include direct fire, indirect fire, improvised explosive device (IED) explosions, IEDs that were found and cleared (F/C), mine strikes, mines that were F/C, and surface-to-air fires (SAFIRE) (representing either surface-to-air attacks or small arms fire). There were well over a hundred non-EIA types. Some of the more prominent examples include accidents, weapons caches that were F/C, detainee events, escalation of force, and medical evacuation (MEDEVAC) actions.

- The Afghan portion of the EIA curve reveals a slowly growing but comparatively low level of EIAs for many years until, starting in 2009, the violence began to increase dramatically. While it is indisputable that EIAs in OEF dramatically increased in proportion with coalition military presence, the large swings in violence from 2010 forward were largely seasonal and not the result of any "tipping point" having been reached.

As U.S. boots-on-the-ground (BOG) decreased in Iraq, they increased in Afghanistan. By mid-2010, U.S. BOG in OEF was approximately two and one-half times greater than it had been at the end of 2008.

Data reveal that the EIA/BOG ratio was actually higher in Afghanistan during several of the post-surge fighting seasons in OEF than at any time in Iraq. This ratio is important since it demonstrates the average U.S. Service member's exposure to violence within the overall environment, especially as it relates to the enemy's use of each of the three primary attack methods: improvised explosive devices (IEDs), direct fire, and indirect fire. With respect to Iraq, the gap between IED attacks and direct and indirect fire widened over time. On the other hand, in Afghanistan, direct fire EIAs remained more constant and would remain so for the entire period of investigation.

The several possible explanations for these inter-country post-surge differences range from how and where the coalition prosecuted the fight to how the coalition perceived enemy strengths or weaknesses. This line of analysis, however, was beyond the scope of this effort. Suffice to say that the differences, for whatever reason, were real.

Despite the emergence of direct fire EIAs in post-surge Afghanistan, Table 2 shows that IEDs were similarly—and by far—the largest casualty producers in each country.

Table 2. Coalition Casualties Caused by the Primary EIA Methods

	Percentage of Coalition Casualties Due To		
Theater (Timeframe)	**Direct Fire**	**Indirect Fire**	**IEDs**
Iraq (Jun 2003 to Nov 2011)	16%	14%	70%
Afghan (Aug 2002 to Nov 2013)	22%	8%	70%

Analyzing the IED and casualty data, one can determine the following:

- The effective explosion rate against blue forces was lower in Iraq than in Afghan.
- The effective explosion rate against green forces was much higher than the explosion rate against blue in each country.
- Blue force trends were slightly favorable and green force trends unfavorable in each country during the respective periods of highest IED intensity.

Per Table 3, while the two countries have similar populations, Afghanistan has approximately 50% more land mass than Iraq but only one-third as many cities with populations of 100,000 or more. In short, Afghanistan is clearly less urbanized than Iraq.

Table 3. Country Size

Item	Afghanistan	Iraq
Area (in square kilometers)	652,000	438,000
Population	Over 20 million	Over 20 million
Number of cities >100,000 people	10	27

Regarding the effect of each war on the civilian populations, Table 4 makes it clear that civilian targeting was common in Iraq but not to the same degree in Afghanistan. This targeting was primarily conducted in each country's capital region.

Table 4. Casualty Ratios

	Casualty Ratios	
Casualty Category	Afghanistan	Iraq
Coalition force	1.00	1.00
Host nation security force	1.57	1.28
Civilian	1.46	4.91

C. Aggregated SIGACT-Based Observations

Several top-level observations were derived via analysis of the 83,000 Army and Marine Corps AC and RC SIGACT reports cited in Table 1. Further, it was possible to compare these reports to the 209,000 SIGACT reports cited in the earlier AC/RC performance work.[7] These observations appeared earlier in the main report and are shown again below in bullet form. The subsection called out at the end of each bullet item refers to the subsection within which the basis for the observation will be provided.

- **Regarding SIGACT reporting.** Fewer overall data points were available in Afghanistan. Also, RC shares were smaller in OEF than in Iraq, especially for RC Marines. AC Marines, however, were an exception. They had a larger reporting share during post-surge ops in Afghanistan than at any time in Iraq, including a higher number of EIA reports. (Subsection 2.C.1)
- **Regarding mission profiles.** As in Iraq, when SIGACTs were generated, Army AC and RC units had different mission profiles, but AC and RC Marines did not (despite the dearth of Marine RC reports). (Subsection 2.C.2)

[7] Adams et al., *Sharing the Burden and Risk.*

- **Regarding direct fire outcomes.** Army and Marine Corps AC direct fire casualty rates in Afghanistan were usually lower than RC direct fire casualty rates. These outcomes were different from those in Iraq but note the low number of RC direct fire reports, especially from RC Marines. (Subsection 2.C.3)
- **Regarding IED outcomes.** Army RC reports revealed lower casualty rates and higher found and cleared (F/C) rates than Army AC reports. Marine RC reports revealed higher casualty rates and lower F/C rates than Marine AC reports Once again, the RC shares (of reports generated) were lower in Afghanistan. (Subsection 2.C.4)
- **Regarding EIA trending.**
  - Post-surge Army IED F/C trending was favorable for the RC and the AC components. The Marine rate was steady for the AC. The RC rate was declining but was based on a small sample. (Subsection 2.C.5)
  - Spikes in casualties were more prevalent than trends, which was true for both Services and components. (Subsection 2.C.5)
- **Regarding non-EIA events.** For the major categories, both Services' AC and RC reporting ratios generally matched EIA ratios. There was one notable, but explainable, exception. (Subsection 2.C.6)

1. SIGACT Reporting

Table 5 supports the following summary statement: "Fewer overall data points were available in Afghanistan. Also, RC shares were smaller than in Iraq, especially for RC Marines. AC Marines, however, were an exception. They had a larger reporting share during post-surge ops in Afghanistan than at any time in Iraq, including a higher number of EIA reports."

Table 5. Percent Share by Year for Service/Component Combinations

Service/ Component	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Army AC	Few	92%	97%	92%	96%	97%	89%	90%	92%	96%	97%
Army RC	None	8%	3%	8%	4%	3%	11%	10%	8%	4%	3%
Marine AC		Few SIGACTs generated				100%	99%	98%	95%	99%	100%
Marine RC		Few SIGACTs generated				0%	1%	2%	5%	1%	0%

Note: The different percentages indicate the percentage of the SIGACTs generated by Service and component (i.e., Army AC and RC – Marine AC and RC).

EIAs in Afghanistan were fairly low until 2009 and then rose appreciably as the BOG count grew. This situation was clearly different from the situation in Iraq. Other prominent differences that were noted include (1) the relatively higher percentage of post-surge AC Marines, especially from 2010–2012, (2) the relatively smaller percentage of Army RCs, especially compared to Iraq from 2004–2007, and (3) the fact that Afghanistan had so many fewer EIAs overall. These differences are due to (1) high-intensity activity in regional command southwest, a Marine Corps-dominated area, starting in 2010, (2) fewer full-spectrum Army RC units in Afghanistan, and (3) fewer U.S. BOG in Afghanistan and the fact that it was a different fight in a different location. The especially low Marine RC EIA percentages show that for only 2 years (2010 and 2011) were any measurable EIA shares recorded. These very low Marine RC shares limited the utility of some of Marine component comparisons in the sections that follow.

2. Mission Profiles

Table 6 supports the following summary statement: "As in Iraq, when SIGACTs were generated, Army AC and RC units had different mission profiles, but AC and RC Marines did not (despite the dearth of Marine RC reports)." A brief discussion regarding known mission profiles as EIA SIGACTs was generated in Iraq.[8]

Table 6. Percentage of Mission Profiles Generated as EIA SIGACTs

Service/ Component	Patrol	Route Clear	Convoy	Base/ Checkpoint (CP) Security	Various Other	Total
Army AC	45%	9%	2%	25%	19%	100%
Army RC	28%	39%	3%	15%	15%	100%
Marine AC	71%	6%	3%	11%	9%	100%
Marine RC	71%	3%	2%	12%	12%	100%

The earlier Iraq analysis[9] revealed that the SIGACT reports offered fewer mission possibilities. Known missions were cited as patrols, route clearance missions, or convoys. Other missions were not indicated. So, considering the relationship of only those three mission types, the profiles for Army AC, Army RC, Marine Corps AC, and Marine Corps

8 Ibid.

9 Ibid.

RC as EIA SIGACTs generated were 74:13:13,[10] 36:28:36, 75:7:18, and 80:3:17, respectively for OIF. These profiles were clearly different for the Army components but similar for the Marine components.

The Afghan SIGACT database had a more robust breakout of mission types during the generation of EIA SIGACTs. In addition to the three mission types cited in the Iraq database, additional missions were indicated in the form of base/CP security, and various others. Also, patrols were further delineated as mounted, dismounted, or simply as patrols. For simplicity, all patrol types are included in Table 6 under the word "patrol."

Since more mission types are indicated in the Afghan database, the specific values for a single category should not be compared to Iraq; rather, the comparisons should be strictly between Services and components for Afghanistan. In that regard, Army AC and RC units indeed had different profiles as EIAs occurred: 45:9:2:25:19[11] for the AC vs. 28:39:3:15:15 for the RC. As in Iraq, the AC tended toward patrolling and the RC had a broader distribution, with heavier emphasis than the AC on route clearing. For the Marines, the view is simpler. Regardless of component or country, Marine components were likely to have similar mission profiles as enemy attacks occurred. This was the case whether a component recorded many or just a few SIGACT reports.

3. Direct Fire Outcomes

The same MOIs considered in the earlier, Iraq-based study[12] support the following summary statement: "Army and Marine AC direct fire casualty rates in Afghanistan were usually lower than RC rates. This observation of direct fire casualty rates finding was different from that of Iraq, but note the low number of RC direct fire reports, especially from RC Marines." Lower aggregated casualty rates appear more frequently for AC forces from both Services. Also, the RC share of direct fire attacks was well under its BOG share, regardless of Service. The Iraq study report revealed (1) lower aggregated casualty rates for RC (than for AC) for both Services and (2) less difference between the RC's direct fire SIGACT shares and BOG shares for each Service than the differences described here. Simply said, the discrepancies between direct fire and BOG shares for the RC likely represent lower RC participation in FSOs in Afghanistan. Regarding the shift in casualty rate favorability from the RC in Iraq to the AC in Afghanistan, the same comment applies here as in the Iraq report. The absolute differences are usually small, regardless of Service or component.

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[10] These numbers are the percentages of SIGACT reports generated for the known missions: patrols, route clearance missions, and convoys, respectively.

[11] These numbers are the percentages of SIGACT reports generated for the three known missions (patrols, route clearance missions, and convoys) and additional missions (base/CP security and various others).

[12] Adams et al., *Sharing the Burden and Risk.*

4. IED Outcomes

Activity levels and F/C percentages compared to respective BOG shares and then casualty comparisons support the following summary statement: "Army RC reports revealed lower casualty and higher F/C rates than Army AC reports, and Marine RC reports revealed higher casualty and lower F/C rates than Marine AC reports. Once again, RC shares were lower in Afghanistan." Similar to the earlier Iraq study,[13] lower aggregated casualty rates were predominantly under the RC column for the Army and the AC column for the Marines. Also, the explosion and F/C shares were well under the RC BOG shares for each Service, especially the Marines (similar to the direct fire shares).

While the effective explosion percentages were again higher against Marines than against the Army, the differences were not as large as they had been in Iraq. The Army AC and RC percentages in OEF (26.6% and 21.6%, respectively) were noticeably higher than they had been in Iraq (16.1% and 16.7% respectively). This data observation suggests the possible effect of high levels of dismounted patrolling in rural areas, where victim-operated switches (e.g., pressure plates) were common.

5. EIA Trending

The post-surge Army trending in IED F/C rates for both components being generally favorable supports two summary statements: "(1) Post-surge Army IED F/C trending was favorable for both components. The Marine Corps rate was steady for the AC, while the RC rate was declining, but based on a small sample." (2) "Spikes in casualties were more prevalent than trends. These observations were true for both Services and components." Moreover, the rates tended to be higher in Afghanistan than in Iraq. By comparison, Marine Corps activity in Afghanistan was largely post-surge. AC rates were generally steady from year to year, though they tended to be higher during the fighting seasons. The RC percentages trended downward but were based on extremely small numbers.

For casualty trending, the direct fire statistics for the Army tend to reveal long-term up/down movement in Afghanistan, especially for AC units ahead of the surge. Post-surge killed in action (KIA) statistics moved upward briefly following the surge and then downward for both components. Casualties per effective attack were also briefly higher and then lower and fairly steady for post-surge AC reports but continued to rise slightly for post-surge RC reports. These observations are not necessarily telling since there were so few RC reports of direct fire engagements compared to AC reports of direct fire engagements. For the Marines, post-surge trends showed periodic spikes for both components, especially for the RC in 2011. Again, though, the sample was small.

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[13] Ibid.

6. Non-EIA Reporting

Table 7 supports the following summary statement: "For the major categories, both Services' AC and RC reporting ratios generally matched EIA ratios. There was one notable, but explainable, exception."

Table 7. Percent Share within Each Service for Major Non-EIA Categories

	Event Category of Interest					
Service/ Component	Accidents	Cache F/Cr	Detainee Actions	Escalation of Force (EOF)	Medical Evacuation (MEDEVAC) Actions	Meeting Actions
Army AC	90%	94%	95%	97%	95%	97%
Army RC	10%	6%	5%	3%	5%	3%
Marine AC	91%	99%	96%	51%	97%	97%
Marine RC	9%	1%	4%	49%	3%	3%

The Afghan SIGACT database has about 150 individual reporting categories for the more than 16,000 non-EIA reports that were identified as originating with Army or Marine Corps forces from both components. Table 7 associates prominent categories with the reporting share for each Service by component.

For the Army, the RC share of accident reporting is a bit higher than the other major non-EIA categories, but it was not the obvious outlier that it had been in Iraq (where the Army RC reported 36% of the accidents recorded in SIGACTs). For the Marine Corps, the RC share of EOF reporting was substantial. This observation will be explained in the exemplar unit discussion in Section D. In general, the AC-RC reporting relationship for both Services was fairly consistent with the overall (EIA plus non-EIA) shares shown in earlier tables.

D. Exemplar Unit Observations

Since the identifiable RC numbers were much smaller in Afghanistan, it was more difficult to create robust comparisons of successive units (e.g., AC then RC or RC then AC) where both units were in relatively the same locations, primarily performed full-spectrum missions, and had sufficient SIGACTs entries to analyze. As a surrogate, then, several different types of comparisons were conducted for each Service.

For the Army, (1) RC Task Force Phoenix units were treated as a single, long-running unit to be compared to all aggregated AC units in the same time frame, and (2) AC and RC units explicitly assigned route clearance missions were compared in specific areas and time frames. For the Marine Corps, (1) given that approximately half of the Marine RC SIGACT reports were associated with EOF, an EOF-specific comparison was conducted, and (2)

two successive light armored reconnaissance (LAR) battalions generated sufficient SIGACT reports for a comparative look.

These analyses enabled the following overarching observation: "Regarding the surrogate exemplar analyses, the findings were generally consistent with those from the aggregated analyses." The basis for this observation is presented in Subsections 2.D.1–2.D.4.

1. Army: Task Force Phoenix as an Exemplar

Following the initial assignment of the 10th Mountain Division, most Task Force Phoenix follow-on units were from the RC, including the 45th Separate Infantry Brigade (Oklahoma), the 76th Infantry Brigade Combat Team (Indiana), the 53rd Infantry Brigade Combat Team (Florida), the 41st Infantry Brigade Combat Team (Oregon), the 218th Maneuver Enhancement Brigade (South Carolina), the 27th Infantry Brigade Combat Team (New York), the 33rd Infantry Brigade Combat Team (Illinois), the 48th Infantry Brigade Combat Team (Georgia), and the 2nd Infantry Brigade Combat Team from the 34th Infantry Division (Minnesota). IDA compared EIAs from these units between 2004 and 2011 to all AC units in Afghanistan during that period.

Even though Task Force Phoenix units were targeted for EIAs many fewer times than AC units during the same period, several observations are in order. First, it is reasonable to expect a lower EIA number for Task Force Phoenix due to the nature of its enduring training mission vs. the AC units that were usually engaged in missions (e.g., patrolling or route clearance) that would have attracted higher EIA totals. Second, despite the large difference in EIAs, a comparison reveals similar proportions of IED, direct fire, and indirect fire activity for Task Force Phoenix and aggregated AC forces for the period examined. With respect to IED F/C rates, comparisons show that Task Force Phoenix had lower rates than the AC but, again, recall the nature of the task force mission. Analysis of the IED and direct fire casualties for these EIAs revealed the following: (1) Task Force Phoenix actually had a better IED-related casualty ratio, suffering one casualty per two explosions compared to three casualties per four explosions for the AC, and (2) the direct fire casualty rates were similar at about 1 casualty per 10 attacks for each component.

2. Army: Route Clearance Comparisons

During the peak surge years of 2010 and 2011, RC forces performed a third of all route clearance missions in regional commands South and East (the most EIA-intense areas for Army forces). The F/C-to-explosion ratios were higher for RC units performing route clearance than they were for AC units performing the same function (by nearly 10 percentage points during this time frame).

3. Marine Corps: EOF Analysis

Recall that the percentages of AC and RC Marine non-EIAs that were categorized as EOF events were nearly equal (51% of the EOF SIGACTs were AC generated and 49% of the EOF SIGACTs were RC generated). These observations were clearly an anomaly given that the overall annual RC Marine SIGACT reporting percentages were never higher than 5% (and were usually even lower as indicated earlier). A specific exemplar unit analysis revealed the reason for the disparity. Comparing the monthly generation of EOF SIGACT reports during a high-activity period for Marine units from January 2010 through October 2011, the nearly equal AC/RC numbers were driven by high RC EOF activity during the 2011 fighting season. In particular, a single RC unit (1st Battalion, 23rd Marines) had the four highest RC monthly totals. Without further investigation, there is no way to know for sure what caused this very high EOF reporting. It may have been based on the criteria applied to report generation, but such a statement is only speculative. The anomaly appears to have been driven by a single unit and was not systemic.

4. Marine Corps: Comparing Successive LAR Battalions

Also of interest in a broader sense, though not necessarily as explanations for the EOF anomaly, was that RC units were more likely to be conducting base security missions and that they resorted to the use of firearms at a decidedly lower rate (7% compared to 25% for AC units) as EOF SIGACTs were generated. In one instance, consecutive battalions from each component that performed similar missions (FSO and security) in the same area (Southern Helmand Province) in consecutive time frames (4th LAR (RC), then 1st LAR (AC) from late 2009 through late 2010) and from which ample EIAs were generated.

Comparisons were conducted of mission profiles and direct fire and IED MOI. Despite the difference in EIA totals, the mission profile percentages for each component as SIGACTs occurred were similar, as depicted in Table 8. For direct fire and IED casualty rates, as with the aggregated comparisons, the AC unit's rates were lower. The comparison is tempered by the fact that the RC sample was considerably smaller due, no doubt, to the fact that a portion of the 4th LAR was either not deployed or deployed elsewhere. The one category where the RC clearly had more favorable outcomes was in IED neutralization.

Table 8. Marine Exemplar Missions as EIAs Occurred

	EIA Mission Types				
Exemplar Unit	**Patrols**	**Route Clear**	**Base/CP Security**	**Various Other**	**Totals**
4th LAR Percent EIAs	64%	7%	8%	21%	100%
1st LAR Percent EIAs	68%	12%	10%	10%	100%

E. Summary

Given the discussions in Sections C (aggregated observations) and D (exemplar observations) against the backdrop of Section B (inter-theater comparisons) and in the absence of large, unexplainable differences between Service components, it is fair to say that

- The SIGACTs-related analyses of the performance of RC forces in Afghanistan largely confirmed the takeaways from the earlier Iraq work, where mission profiles differed between Army AC and RC forces; mission profiles between Marine AC and RC were the same.[14]
- Ultimately, SIGACTs analyses in both theaters suggested that AC and RC forces shared in the burden and the risk while producing similar operational results without significant differences.

In the next chapter, we consider assessments associated with air strike data, beginning with a discussion of the captured data and the methodology employed to conduct the OEF analysis.

[14] Ibid.

3. Air Strike Data Assessments

A. Introduction and Data Discussion

When looking for air forces' combat performance metrics that can be measured repeatedly and reliably, the most direct reporting of air strike success provides an unambiguous and agnostic criteria. Air strike success is a culmination of the entire kill chain of events and is susceptible to perturbations from the airplane, the weapon's performance, the targeting accuracy, the pilot's skill, and the target's ability to maneuver away from or survive the attack. For this reason, the MISREP was used as the basis for data collection since each of these areas of concern is capable of being captured in the standard MISREP.

Theater requirements for the United States Central Command (CENTCOM) specify that a MISREP will be filed after every mission for all aircraft operating for the CAOC, which includes the United States Air Force (USAF), United States Navy (USN), United States Marine Corps (USMC), and allied forces.[15] The MISREP is a source of objective data (altitude, speed, time over target, and so forth), and subjective data ("good hit") that lends itself to aggregation and analysis. From 2007 onward, rotary wing aircraft from USAF, USN, USMC, and allies are also recorded in the MISREP Analysis Tool (MAT) database.

1. Sources of Data

Data were gathered from two databases: the THOR database and the MAT database. The THOR database collected MISREPS from October 2001 to February 2012. The MAT database contains reliable data on MISREPS from March 2007 to the present day. MISREP structure has evolved during the last 15 years, so the more recent reports have additional fields that are not present in the earlier reports. However, a common core of information is present in all MISREPS.

Since October 7, 2001 (the start of hostilities in OEF), THOR and MAT have amassed a total of approximately 135,000 records from OIF, OND, and other global and domestic operations. A period of overlap exists between THOR and MAT from 2007 to 2012. By

[15] U.S. Army rotary wing aircraft are not doctrinally required to file MISREPS with the CAOC. Their reporting is more often found in the SIGACT database. The SIGACT database is sufficiently different in structure and content that it was not evaluated as part of this investigation of aircraft MISREPS.

examining 21 unique fields in each corresponding record, approximately 6,500 records have been identified as duplicates.

2. Data Quality

These MISREPS, being reports that are quickly filled out following a combat mission, have varying degrees of completeness and detail. The report may contain sparse commentary on the mission or paragraphs that explain events in detail depending on the intelligence officer who debriefs the crew, the nature, length, and complexity of the mission, the latency between the mission flown and the report being generated, and other factors. The varying quality of the reports can complicate the data standardization process.

Several procedures are in place to ensure the accuracy of the information in the MISREP. Data are pulled from multiple sources outside of the crews' control (automated data recorded by the aircraft, airborne warning and control system logs, and forward joint terminal attack controllers (JTACs)). This information is then compiled in a MISREP and filed. Since 2007, the MAT has automatically added each filed MISREP from the CENTCOM area of responsibility (AOR). MISREPS before 2007 were compiled manually in the THOR database.

3. Data-Conditioning Process

We used data-conditioning processes to enhance the utility of the combat MISREPS. This process focused on formatting errors that confuse automated data ingestion algorithms. The combat expedient of listing weapons used during a strike separated by a slash (100/3/200 5.56/AGM-114/30mm) can confuse current database software and requires human intervention to properly break out each pass over the target. Moreover, the MAT disaggregates target position details from mission flight details in the MISREP, so that information requires aggregation.

4. Strike Success

The evaluation of an air strike's success is a complex and multi-layered process. According to the "Commander's Handbook for Joint Battle Damage Assessment,"[16] Joint Publication 2-01.1,[17] defines Battle Damage Assessment (BDA) as "The timely and accurate estimate of damage resulting from the application of military force, either lethal or non-lethal, against a predetermined objective." For this study, we evaluated strike

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[16] U.S. Joint Forces Command Joint Warfighting Center, "Commander's Handbook for Joint Battle Damage Assessment" (Washington, DC: Office of the Secretary of Defense Joint Battle Damage Assessment Joint Test and Evaluation, 1 June 2004), i.

[17] Joint Chiefs of Staff, "Joint Tactics, Techniques, and Procedures for Intelligence Support to Targeting," Joint Publication 2-01.1 (Washington, DC: Joint Chiefs of Staff, 9 January 2003), GL-6, https://fas.org/irp/doddir/dod/jp2_01_1.pdf.

success based on the comments contained in the MISREP. These comments ranged from the definitive “good strike” to the more nebulous “Weapon left rails with good GPS lock.” Where possible, the data field “Ground Commander Intent Met” was used as the primary success criterion, with pilot comments being secondary. Likewise, failures of the weapon were well documented (e.g., “dud,” “missed target by 10 meters,” “weapon struck but failed to go high order”) and were simple to adjudicate, as were the negative comments in the “Ground Commander Intent Met” field. Fields left blank or comments such as “Unk” or “Clouds obscured target” resulted in the use of the unknown category being considered as a proxy for a strike success assessment.

5. Error Management

Several sources for error are possible when dealing with MISREPS. The easiest sources to address are gross errors in which the numbers are obviously wrong (e.g., weapon weight alone is greater than the maximum takeoff weight of the aircraft; latitude or longitude values that place the attack on an allied country; B-52 bomber attacks against Iraq in 2017 (instead of 2003–2011); and so forth). These errors tend to be obvious, and closer inspection usually reveals the source of the error (e.g., numerical transposition, a missed plus or minus sign, a mistyped character, a character recognition error in the optical character recognition (OCR) process, and so forth). Other errors are more subtle and require greater levels of effort to find and remove. One of the most common of these subtle errors is duplicate entries, where the same data may be entered in multiple records. Sources for this error include poor database ingest procedures (i.e., the data are accidentally loaded more than once). Normally, this error would affect a range of sorties that are input at the same time, which tends to draw attention as an anomaly during review procedures. Alternatively, initial and follow-up reports of the same sortie may be input as more data become available over time. Here, the solution is usually to choose the latest report on the grounds that it should have the best data.

In addition, when merging data from different databases, the same sortie may appear slightly differently due to slightly different data structures. The key is to analyze multiple data elements to determine whether the sortie is actually a duplicate. If, for example, the date, take-off base, take-off time, aircraft type, unit, mission number, call sign, weapon load, and target struck are simultaneously identical, then the entry can be flagged as a duplicate. The criteria that are used vary slightly depending on the quality and nature of the dataset, but, in general, no less than 5 independent data elements and up to 21 fields were compared to determine the likelihood of duplication. Another source of error and confusion is when dealing with aircraft that carry more than one weapon type and/or strike more than one target. It is possible that these aircraft can be counted as multiple sorties instead of multiple strikes by the same sortie.

The target coordinates are another potential source of error (see Table 9). Because the science of geodesy has evolved over time, the underlying shape of the Earth and the resulting coordinate system in use has been refined multiple times. Moreover, different grid schemes with different reference points have been used (e.g., the Military Grid Reference System (MGRS)), which also requires conversion to latitude and longitude values. The database preserves the original coordinates as provided in the original data and also performs the conversions to the current World Geodetic System 1984 (WGS84) decimal latitude and longitude standard (DD.DDDDDD, for example, where "DD" equals degrees and ".DDD…" equals the decimal fractions of degrees for the location.) This format is slightly different from the Degrees/Minutes/Seconds format that is still reported in some MISREPS. Depending on the accuracy and spatial resolution of the original measurement and the accuracy of the conversion process, any inherent location error may be magnified as part of the transformation. The strike database converts all original measurement formats to a DD.DDDDDD format for consistent calculation and reporting.

Table 9. Geolocation Uncertainty Based on Coordinate System Precision

Location Measurement System	Original Measurement Format	Limit of Geolocation Accuracy (Meters)	Limit of Geolocation Accuracy (Feet)
Latitude/longitude, where DD represents the value in degrees equivalent to DDD for longitude and M represents minutes, S represents seconds, and .DDD represents decimal fractions of a degree	DD MM	1,868	6,072
	DD MM SS	31.1	101.8
	DD	112,080	364,320
	DD.D	11,208	36,432
	DD.DD	1,120.8	3,643.2
	DD.DDD	112	364.3
	DD.DDDD	11.2	36.4
	DD.DDDDD	1.2	3.6
MGRS or Universal Transverse Mercator (UTM), where AA represents the 100,000 m digraph, X represents Easting, and Y represents nothing	AAXY	10,000	32,500
	AAXXYY	1,000	3,250
	AAXXXYYY	100	325
	AAXXXXYYYY	10	32.5
	AAXXXXXYYYYY	1	3.2

B. Database Design

There were many potential ways to organize the data. Depending on how the data were organized, one could either get an accurate count of sorties flown, weapons dropped, or targets hit but not all three. Therefore, efforts have been made in the design of the THOR database to be flexible enough to answer each of these questions while not falsely inflating the other values. The challenge has been how to account for multiple planes attacking multiple targets with multiple weapons per sortie flown. The solution

has been to have each instance of a unique weapon type or engagement of a unique target generate a new record. That is, if plane A drops six 500 pound bombs on target 1, that engagement will generate one record. If the same plane A drops two 250 pound bombs on the same target 1, that engagement will generate a second record. If the same plane A then drops three 250 pound bombs on a different target 2, that engagement generates a third record. Thus, the same sortie can generate multiple records. The "Sortie Dupe" field is a flag indicator that will be set to zero for the first weapons' use and will be a "one" when the same sortie employs multiple weapons or attacks multiple targets. A request for a sortie count/summary and so forth will ignore records with a "one" in the "Sortie Dupe" field. That way, the correct accounting can take place whatever the focus of the accrual count (sorties, weapons, targets).

1. Terminology

Terms that are sometimes casually used interchangeably have similar meanings but can lead to different numerical answers. For consistency, the following terms are used throughout the database and report:

- **Sortie.** One takeoff and landing of one aircraft.
- **Mission.** One or several sorties that are grouped together to accomplish a specific purpose.
- **Record.** One line of data in the database.
- **Munitions weight.** For consistency, all tonnage terms use 1 ton = 2,000 pounds. All munitions weight values in THOR are converted to pounds and fractions of a pound (i.e., a value of 1.0625 pounds is used, not 1 pound and 1 ounce). All kilograms are converted to pounds using a factor of 2.2 pounds/kilogram. All bullet weights are in pounds. Only the warhead portion of a missile or bullet portion of a cartridge round is used in the database. For example, a notional 100 pound Hellfire missile has a 10 pound explosive head and approximately 90 pounds of booster fuel and structure. Only the 10 pounds of explosive that reach the target are counted in the database. Likewise, a nominal 30mm high explosive incendiary with tracer (HEI-T) cartridge weighs 1.48 pounds,[18] of which only the .79 pound bullet would be recorded in the database.
- **Strike.** Each attack on a separate target during the same sortie is counted as a separate strike. A separate target is defined as a unique set of latitude and longitude coordinates.

[18] NavWeaps, "30 mm (1.2") Bushmaster II Mark 46 Mod 1 and 40 mm (1.57") Bushmaster II," accessed November 28, 2016, http://www.navweaps.com/Weapons/WNUS_30mm_BushmasterII.htm.

Attacks on a target made by the same striking force within an arbitrary 90 minute window are considered part of the same strike. The time window is used as a cutoff to account for when attacking sorties can make one or multiple passes over the target, break off, refuel, or reacquire and reattack the same target, thus accounting for the potential situation of one aircraft having accomplished two strikes on one target during the same sortie.

2. Component Affiliation Assumptions

For this study, to the extent possible, we identified the performance of the individual components (Active and Reserve) and National Guard (NG). To do so, it was necessary to synthesize the component affiliation from associated metadata since this affiliation is not part of a regular MISREP data structure. IDA analyzed unit data recorded in the MISREP as a method for synthesis. The most straightforward method was when the home unit would identify itself as an expeditionary version of its home squadron by placing an "E" in front of the squadron identification (ID) (i.e., "20 BS" becomes "20 EBS"). We had the database look for this "E" designation and correct for home unit designation, establishing affiliation to one of the components. A more challenging situation was when the squadron affiliated itself with its expeditionary wing (332 AEW, for example). In these cases, a look-up table of what units deployed and when to identify which Air Expeditionary Wing (AEW) was all RC, all AC, or a mix was necessary.

Lastly, in some cases, not enough information was available to posit a unit or component affiliation. The largest group of these cases occurred during the first months of OIF, when operational tempo was high and MISREP reporting was purely a manual entry process.

In all cases, the underlying assumption, based off of the best information obtained from the theater, is that the squadron affiliation identified in the MISREP represents the aircraft and not necessarily the crew. This assumption may be false, but it has been the working hypothesis for this analysis. The fact that the Air Force Total Force concept trains and evaluates all pilots to the same standards means that the CAOC does not track tail numbers or crew component affiliation at the operational level. Therefore, it is quite possible that an active duty pilot is flying in a Guard or Reserve aircraft or any combination of those variables. This kind of substitution occurs with some frequency.

An untested assumption is that most crews stayed within their component's airframes. In part, this assumption is based on rotational timing and basing, where a dissimilar component but a similar aircraft were often flying from different take-off locations. There are cases in which more than one component in like aircraft were collocated. In those cases, unless the squadron was identified in the MISREP, the data are considered unknown.

MISREPS from the OIF Major Combat Operations (MCO) phase tend to have more records that lack unit-level information, for several reasons. Historically, data collection

lags behind combat planning and execution. Record-keeping systems eventually catch up given the frenetic pace of operations. Thus, details such as unit affiliation may become lost or confused as MISREPs are filled in well after the event occurred. When evaluating the performance of one component against another, care must be taken to not overlook the large number of unaffiliated records that could skew the data in favor of one component vs. another.

C. Evaluation of Strike Data

With the air strike database consisting of 135,142 records from OIF, OEF, and Operation Inherent Resolve (OIR) from the years 2001–2015 and based on MISREPS filed with CAOC at completion of each mission combining plane data, pilot, and JTAC eyewitness reporting, each record is a weapons employment on a target. Of the total number of records, 131,059, or 96.97% (see Table 10) contain comments and amplifying data indicating strike results:

- **Success.** "Good hits," "Struck target," "Desired effects achieved," "Dropped within valid parameters."
- **Failure.** "Missed," "Unsuccessful," "Dud," "Failed to guide," "No drop."
- **Unknown.** "Could not confirm," "Unassessable," "Unk."

A total of 118,891 records, or 87.97% have success/failure initial BDA results.

Table 10. Summary of BDA Across All 131,059 Records

Conflict	Successful	Unsuccessful	Unknown	Blank
OIF	67.9%	12.8%	11.2%	8.1%
OEF	83.9%	2.6%	11.7%	1.8%
OIR	80.1%	7.1%	12.8%	0.0%

Greater detail is provided in the accompanying classified appendix; however, none of the components seemed to have failed in the execution of strike missions. Variations in performance occur at times, but assigning the component affiliation as the sole reason for these variations is beyond the capability of the data at hand. Performance was evaluated against different classes of weapons (guns, dumb bombs, precision-guided munitions, missiles, and rockets). Using different classes of weapons provided a large enough number of events to be statistically significant. The results did not depict statistically significant differences. Other factors that make this analysis challenging consist of the nature of the target: Was it fixed or moving? What specific kind of munition was being used? Were there collateral damage considerations that influenced employment? Was the target described in the MISREP beyond a set of coordinates? Were these strikes early in the campaign or near the end of the campaign?

Since the initial look at OEF strike records showed that Guard and Reserve units participated in similar missions, against similar targets, and with similar weapons in the same geography, was there a better way to characterize RC participation rather than reporting raw percentages of weapons employed? IDA researchers postulated that even in an insurgent environment like Afghanistan, significant battlefields could be disguised by the nonlinear nature of the modern battlespace; however, by looking at the data at a joint level, these key locations could be teased out, and RC participation could be assessed with respect to these key battles.

The first step was to combine the ground SIGACT database and the air strike database to create a dataset that was synchronized in time and space. Each record in each database was date tagged, time tagged, and geotagged to a high degree of position, thanks to Global Positioning System (GPS)-enabled devices in the military inventory. By truncating the GPS coordinates to two decimal places in latitude and longitude, we were able to define grid squares approximately 1 square kilometer in size.[19] A unique identifier for this location was created by generating a string composed of the latitude and longitude values (e.g., "39.88_64.02"). It was then just a matter of constructing a pivot table (a table that summarizes data in another table) to sort and tabulate all of the activities in the air and ground datasets that occurred inside that unique location.

Since the SIGACT database for Afghanistan held approximately 450,000 records, some editing was performed to pare these records to a more manageable number. Since we were interested primarily in conflict and the air strike database is weapons focused, we excluded those SIGACT records that did not pertain to a kinetic exchange between Red and Blue. This approach excluded SIGACT entries that reported meetings, law enforcement activities, threats and hoaxes, and so forth and brought the number of included SIGACTs to a more manageable 114,000 records. Combined with the 83,000 air strike records, the combined dataset was just shy of 200,000 records.

As evidenced by the air strike distribution shown previously, reporting of events was not constant over time. This reporting of events is related to the level of activity, the number of platforms or reporting troops in the AOR, and the maturity of the reporting system. For example, SIGACT was not in widespread operation at the beginning of OEF. It really matured in the 2005–2006 period. Thus, ground activities were underreported before that date. Counter-balancing that shortfall is the fact that very few ground troops were on the ground early in the war, which might mitigate some of the possible underreporting.

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[19] Due to the curvature of the Earth, grid squares generated by this method are actually 1.06 square kilometers at the southern end of Afghanistan and 0.94 square kilometers at the northern end of Afghanistan, but this variance was not critical to this method. The important point was that there was no overlap and that each square was unique.

To provide initial boundaries to these battlefields, some arbitrary choices were made based on time and resources available:

- A square had to host at least 50 records, either SIGACTs or MISREPS in any combination over the 14 year period, to be counted as part of a battlefield cluster.
- Battlefield clusters of 50 event grid squares had to total at least 400 events to be counted as a major battlefield. Clusters were considered independent battlefields when a gap of 20 kilometers or more separated them from an adjoining cluster.

These rules were determined after analyzing the data and were informed by the patterns that we identified in the data. Results are depicted in the classified appendix.

D. Recommendations for the Future

Analytically, the most important recommendation for the future is one that was acknowledged and began to be addressed midway during the OIF and OEF campaigns: the MISREP process needs to become more automated and the friction involved with capturing the data needs to be reduced. The introduction of the MAT is a key step in quickly capturing transient operational details and preserving them in a comprehensive record system. MAT is only the first step, however. More work needs to be done on enabling analysis tools, and a significant investment needs to be made in cleaning up the combat shorthand that frustrates computerized analysis. Smarter database ingest algorithms need to be developed, or manual data cleaning needs to be performed to improve the quality of overall records so that they can be used for analysis in a timely and accurate manner.

In Chapter 4, assessments based on the interrogation of archived and IDA-conducted interviews are described, including the methodology employed to determine the utility of archived material as it related to OEF and RC operational effectiveness. IDA conducted an expanded search to obtain greater diversity of Service perspectives compared to the OIF research effort. The results are highlighted in the overall impressions portion of the chapter.

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4. Interrogation of Interviews and Assessment

A. Introduction

Phase One efforts focused on OIF and used an extensive pool of IDA-conducted interviews and a large set of interviews from the Army's CSI Operational Leadership Experiences (OLE) archive. Phase Two, which focused on OEF, addressed the question of how RC usage and performance experiences differed from those of OIF.

In support of this effort, IDA continued to conduct interviews with current and former senior military and civilian personnel, including a U.S. ambassador to Afghanistan. The focus of these interviews was slightly different from the previous set since they concentrated on OEF and on particular functional areas (e.g., logistics, combat support services, SOF, aviation, ministerial advising, and security force training). In addition, the existing corpus of interviews from Phase One (both IDA-conducted and OIF-specific) was also reviewed for all commentary that either referred to OEF or that was explicitly common to both operations.

The CSI OLE archive was used again for interviews specific to OEF. That effort was expanded to other Services by use of oral histories from USN and USMC collections. IDA was unable to identify and access any similar unclassified archives for the USAF. Each of these efforts is discussed in the sections that follow, and overarching observations are provided as a conclusion.

B. IDA OEF Interview Summary

Starting in November of 2016 and extending into the fall of 2017, IDA conducted not-for-attribution interviews with military and civilian personnel, who recounted their experiences in support of OEF. The interview subjects included senior military personnel (06 and above and two command sergeant majors) across multiple Services and components, civilian officials, and a U.S. ambassador to Afghanistan. IDA also reached out to the North Atlantic Treaty Organization (NATO) to discover whether allied officers would be willing to be research participants; however, the appropriate officers could not be identified by the organization at the time of this writing. Interview notes were transcribed and reviewed by the interview team before being submitted to thematic analysis based on the topic and sentiment codings used in the OIF tasking.

Several research participants advanced the idea of preexisting negative perceptions of the RC's capability. Some individuals indicated that these beliefs were personal, while others indicated that these beliefs referred to institutional perceptions. The research participants did not give any indication that these initial preconceptions caused mission performance issues. In fact, several participants indicated that those perceptions had changed once people became familiar with the RC. Nearly all of the participants expressed the idea that AC and RC units and personnel, at some point, were largely indistinguishable from one another in the OEF operational theater. All but one interview subject expressed positive evaluations of RC performance. The lone exception was still scrupulous in avoiding negative commentary, which was inferred from comments such as "if the AC struggled, you can imagine how the RC performed." In general, positive commentaries largely evaluated the RC on its ability to match AC performance, although some participants went beyond that metric and indicated that the RC and AC have differences that are institutionally rooted. Their attitude is that measuring the RC against the AC and the AC against the RC is a false comparison. Comparisons also need to take into account the kind of contribution that is being made. Invariably, these individuals had exceptionally positive views of RC performance. This set of interviews supported the previous theme (from OIF interviews) concerning differences in the quality of air and ground assets. While both assets received generally positive evaluations, the air contributions are noted for (1) having the same standards across components and (2) RC units performing the same as or even outperforming their AC counterparts.

The overall positive impressions did not prevent research participants from being critical. Multiple persons indicated that unit performance was more likely to be determined by the circumstances of the deployment, the assigned mission, and the operational environment rather than the component makeup of the unit. Both AC and RC personnel had difficulties adapting to the operational environment but performed well once they became acclimated. Some research participants suggested that RC units, especially on initial deployments, may have required a slightly longer acclimation period and that this effect, combined with shorter deployment times, could contribute to perceptions regarding RC performance. However, these same sources were also quick to point out that these differences have largely been erased, given that most units now have operational experience.

Some RC-specific issues were mentioned. Primary among them was the issue of equipment. RC units have faced institutional barriers and decisions that limit their equipment modernization, which means that their day-to-day training is often on different equipment than the equipment that used for their pre-deployment training and will use in the field. This issue was specifically raised regarding command and communications equipment. While no interview subject explicitly indicated a linkage between RC performance

and equipment modernization, it may play a role in a deficiency noted in the OIF interviews—namely, the difficulties that RC units faced in integrating with higher level headquarters.

Other issues were usually specific to the research participant and can be linked to issues identified in the OIF interview efforts. For example, a couple of research participants indicated that long-term sourcing issues were related to early cross-leveling—more generally, the use of individual augmentees (IAs). While some of this use of IAs was due to general personnel readiness levels, research participants also noted that it was exacerbated by the need for individuals who could support niche demand programs such as the agricultural development teams (ADTs) and that these individuals came disproportionately from the RC. As with the OIF interviews, some research participants expressed frustration that Department of Defense (DOD) policy and bureaucracy were factors in meeting deployment schedules and readiness levels. Differences in opinion were expressed as to whether these issues have resulted in appropriate lessons learned or whether the processes need to be revisited.

In general, the consensus—to a large degree—was that the RC was able to transition successfully from a strategic reserve to an operational reserve. Issues and challenges remain, but nothing is insurmountable. The RC made substantial contributions in kinetic and non-kinetic capabilities that made simultaneous prosecution of OEF and OIF possible.

C. IDA OIF Interviews

IDA personnel, in support of Phase One of this tasking, conducted interviews of senior military personnel and DOD civilians, during which these military personnel/DOD civilians recounted their experiences in support of OIF. The notes from these not-for-attribution interviews were transcribed and reviewed by the interview team before being submitted to topic and sentiment coding. Much of the commentary from these interviews was not specific to OIF but rather was generally applicable across OIF and OEF. Because of this observation, the corpus of interview notes was subjected to a second round of analysis that focused on whether any observations were specific to OEF. Of the IDA-conducted interviews, roughly 50 had specific or implied references to Afghanistan. A small portion of these references referred only to a deployment to Afghanistan or an OEF-specific assignment. Other comments only indicated environmental differences, such as noting differences in distance or road structure. Most of the other references either explicitly indicated that their comments applied to both operations (often referring to “Iraq/Afghanistan” or a similar construction) or implicitly did so by not indicating a specific theater or operation.

In general, the commentary reinforces the notion that OIF was the dominant institutional management-forcing function and that deployment and mobilization scheduling problems were primarily caused by the need to support the substantial footprint in Iraq

while also maintaining a presence in Afghanistan. RC employment in OEF before OIF was not viewed as problematic in any way except in one instance in which the interview subject indicated that the original decision was that RC support for OEF was to be all volunteer. This decision amounted to about 20,000 individuals pulled from units, and many of these units ended up needing to be mobilized for OIF. It was also cited as a contributing factor for abandoning the time phased force deployment sourcing plan for OIF. The research participant indicated that multiple RC leaders expressed frustration with being trained for a deployment to Iraq only to have their unit diverted to Afghanistan. No personnel indicated being diverted to Iraq after training for Afghanistan.

Reinforcing the position of preexisting negative perceptions of RC capability was the commentary of one RC member. He indicated that even as late as 2010, RC members serving as IAs were hiding their component affiliation from their AC colleagues.

References to substantial "in lieu of" assignments seem common to both theaters, with no indication that one or the other was particularly vulnerable to these kinds of assignments. Commentary indicating cross-Service "in lieu of" assignments seemed more prevalent in the OEF-specific interviews. Interviews did not provide information on what portion of these cross-Service deployments were sourced via RC elements of those other Services.

Derogatory experiences with RC units or personnel were substantially less prevalent than those that indicated praise. One research participant referenced an NG unit that did not have a beyond-line-of-sight capability—a deficiency that locked this unit out of deployment to Afghanistan. A singular reference was made to RC leadership deficiencies in Afghanistan (reference speaks of "s---canning" a number of 06s). Context seems to indicate that this reference was an instance of an Afghanistan example being used to illustrate a general issue and that it did not represent a specific weakness of RC elements specific to Afghanistan. Later in the interview, the same individual who made this reference praised RC contributions to provincial reconstruction teams (PRTs) in Afghanistan. A few individuals made a performance distinction with respect to ground combat, indicating that even as late at 2013–2014, the difference in AC and RC ability in this area was still noticeable. In some of these instances, the performance differences are ascribed to level of experience. AC units are presumed to be more experienced largely because of faster deployment turnaround rates. RC personnel expressed some frustration because their units were split across Afghanistan and occasionally across the operational theaters, which severely disrupted unit cohesion.

The use of RC members to fulfill IA requirements was cited as a source of strength and as a source of weakness for both operations. What is specific to Afghanistan was the tremendous amount of volunteerism in the initial (pre-OIF) stage of OEF. While this volunteerism had the immediate effect of alleviating personnel shortfalls due to non-deployable individuals and made sourcing of specific skill sets easier, it had long-term detrimental

readiness effects when the units from which they had been taken were needed for OIF. This situation was exacerbated because at least some of the initial flow of IAs into Afghanistan was based on personal selection from among the pool of volunteers. The best and brightest were chosen and were no longer available for their home units.

With respect to positive capabilities specific to the RC, several individuals noted reserve heavy elements, such as Navy engineer organizations and/or civilian skill sets, as being particularly useful in establishing initial operating capabilities within the austere Afghanistan environment. For the most part, however, comments regarding the leveraging of civilian skills were common across both theaters. Likewise, positive contributions by RCs to intelligence efforts were the same for both theaters. One of the few comments regarding USMC reserve units indicated that the USMCR was capable of meeting all readiness needs for the initial deployments into Afghanistan but that readiness became more of an issue with the far heavier footprint in Iraq.

D. Non-IDA-Conducted Interview Summaries

1. Navy Interviews

The Naval History and Heritage Command made its archives of oral histories available to IDA. A specific subset of those oral histories address Navy Service personnel experiences with OEF, and this subset was made accessible to IDA researchers. Included within this subset was also a series of interviews that focused more specifically on AFPAK Hands. A sampling of these interviews was examined for relevance to the OEF phase of this task.[20] From the over 100 interviews examined, a dozen were selected for detailed coding. Insights were drawn from the interviews selected for detailed coding and from the general impressions received from all of the histories examined. From the sampling, the worth of further exploitation was determined. A determination was made that while additional exploitation of the archives might be of more relevance with a more constrained search criteria (most specifically for oral histories that reference OEF service later in the conflict), little in the corpus that was examined suggested any substantial deviation from already garnered insights.

The oral histories, for the most part, cover the Service member's career and, as a consequence, little of any given interview was directly relevant to either OEF or OIF. Most of the histories that did reference OEF were conducted in either late 2001 or early 2002 and therefore reflected only the very early stages of that conflict and, for the most part, did

[20] While pulling histories with OEF relevance was relatively easy, the nature of the records (some exist only electronically, some only in hard copy, some only as abstracts) makes determination of the value of any given interview laborious.

not substantially address effects resulting from OIF. As a consequence, the limited references to RC employment largely reflected existing reserve presence. Useful references to mobilization or readiness are therefore nonexistent.

Very little discussion was specific to the Navy reserves, and this lack of specificity was compounded by the unfortunate circumstance of having no codeable reservist oral histories.[21] The oral histories contained some limited discussion of other Services and their performances, but these discussions were peculiar to specific experiences. A uniformed military lawyer did express significant concern that not enough forces were being trained for detainment duties and that the practice of providing limited training to RC units and having them perform these duties led to significant issues. The way that the concern was expressed left it unclear whether the greater issue was lack of trained personnel from any component or whether the interviewed personnel thought the RC (principally Army Reserve and Guard units) were particularly ill suited. This same officer noted his belief that the Navy was "fatigued" with Afghanistan and particularly with the IA nature of their contributions. However, this reference reflects the use of Navy personnel (without component delineation) as IAs to ground and joint entities (such as PRTs, or as members of AFPAK Hands).

2. Marine Corps Interviews

Two sets of USMC interview sources were reviewed. A small set of interviews was obtained from the Center for Advanced Operational Culture Learning (CAOCL). These interviews focused on issues other than the operational experience of Service components and, after review, were deemed unresponsive to the task. A second set of interviews was obtained through the History Division of the Marine Corps University. These interviews, like the Navy interviews, were oral histories; however, they tended to be more focused on recent deployment histories and therefore were relatively more responsive to task needs. One limitation on their utility was that they tended to emphasize characterization of the operational environment rather than their evaluations of performance.

Of the slightly more than 50 oral histories examined, a handful was determined to be wholly unusable. The remainder fell into two main groups. The first group were oral histories of active duty Marines, most of which had only passing references to the USMCR. These histories were primarily useful for understanding issues facing the Marine Corps (regardless of component) and the extent to which these Marines perceived their service as successful. While the absence of commentary regarding reservists could be an oversight,

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[21] While a few of the OEF-relevant interviews that were examined were conducted with reservist personnel, none were deemed suitable for detailed coding. These interviews either existed only as abstracts or were non-responsive to the task needs (often strictly factual accountings of their deployment with no evaluative commentary).

the nature of reservist integration into active units suggested that it may have been more reflective of a lack of differentiation between active and reserve Marines. A small subset (less than 10) of these interviews had more extensive discussions of reservists, and these interviews tended to be uniformly supportive of reservist capabilities. In addition, two other interview subjects (both active duty Marines) served with and spoke about their perceptions of ARNG units. A second group was composed of 15 oral histories of individuals who identified as Marine reservists, all of whom spoke to some degree about their experiences. Last, a couple of flag officer interviews were particularly informative concerning the relationship between the AC and RC within the Marine Corps and provided substantial indicators of why performance evaluations for the USMC, with respect to its reserves, might differ significantly from that of other Services.

The overall impression suggested that the Marine Corps reserves were heavily integrated with active units. In contrast to other Service commentaries was a marked absence of references that would indicate identification as a reservist. Even the speakers referred to themselves as Marines rather than as reservists.

General observations on the Marine's use of their RC:

- Reservists are primarily employed as IAs.
- Reserve units tend to be smaller echelon or detachments of larger echelon formations that are attached to active units.
- The Marines have substantially resisted efforts to move specific capabilities to be only resident in their reserves.
- Marine reservists, as IAs and as units, are integrated into ongoing operations and exercises. The AC and RC train and serve together, even in peacetime.
- While other Services tend to treat AC performance as the highest level achievable, several commentaries indicated that Marine RCs (especially within aviation) are perhaps more capable than the AC.

A substantial portion of this integration occurs through IA processes. Most of the individuals who indicated that they were IAs had some level of personal interaction with the unit that they augmented. This interaction suggests a much more personalized system than is present in other Services. A cited advantage of using the reservists for IAs is that it prevented them from needing to strip active units to meet needs. Being able to draw from the reservist pool also made it easier to meet specific occupational specialty requirements. The Marines do not seem reluctant to rely upon their reserves for senior rank IAs, which contrasts significantly with the information gleaned from the Army interviews. Several interview subjects suggested that the USMC does not allow specific skill sets to be resident only within the RC. However, in some areas, operational levels of capability require some reserve call up to be fully capable. Chief among those areas is Civil Affairs. The interview

subjects made limited mention of the utility of civilian skills and experiences and a willingness of ACs to indicate that RCs were at least as capable.

Individuals familiar with Marine Corps aviation assets indicated that it is common for reserve units to have significantly more operational flying experience than their active duty counterparts. One subject indicated that all reservist squadron units maintain a small element of active duty personnel to run the day-to-day affairs of the unit—yet another indicator of the level of their integration between ACs and RCs. Certain USMCR aviation assets (tanker/transport) were noted as taking part in real-world operations (as opposed to exercises) on at least an annual basis, which implies that this integration with the active elements is normal across the Service.

Most individuals gave overall positive appraisals of their unit, its experience, and its performance in Afghanistan. Only one interview subject expressed substantive negativity, and this comment was not directed at the reserve element. While occasional negative comments arose in most of the oral histories, these comments were directed mostly at overall performance in a difficult theater. Nothing suggested that any of the identified issues were specific to reserve elements.

Mobilization issues, with respect to the reserves or otherwise, were barely mentioned. Those issues that were mentioned tended to indicate that despite some early process issues, the focus was on finding a way to achieve what was needed. Marines were keen to emphasize that there was no shortage of individuals willing and eager to mobilize.

3. Army CSI-OLE Interviews

The CSI OLE archive was queried for personnel who had served in OEF, and, from that group, a set of 37 interviews was selected.[22] As with the other Services, it was difficult to isolate Afghanistan-specific issues from these texts. Most references to performance were not operation specific. When evaluations were offered, they rarely indicated Guard- or Reserve-specific capabilities. OEF Guard and Reserve commentaries seem to center around specific special capabilities: PRTs, information operations, civil affairs, psychological operations (PSYOP), training, and so forth. Operational maneuver references were almost non-existent. During one of the IDA-conducted interviews, an interview subject suggested that Army deployment of its RC into Afghanistan differed significantly from the deployment of its RC into Iraq. The comment made was that RC deployments to Afghanistan were mostly company level deployments (and IAs).

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[22] This number is substantially smaller than the 110 interviews used for the OIF phase of the project. The intent was to determine whether substantially enough differences in the operations existed to warrant expansion of this sample. Initial exploitation of these interviews did not support such an expansion.

One element that was unique to Afghanistan was a couple of references to some institutional problems between the Guard and Reserves regarding the training of the Afghan National Army, specifically with Embedded Training Teams. It was noted that the Guard had assumed primary responsibility for this mission but that doing so was squandering units that were capable of operational maneuver. It was suggested that this situation could have been alleviated by augmentation with RC units that had existing institutional training missions. A second difference had to do with the nature of deploying into Afghanistan. While units serving in OIF could—and most often did—deploy into Kuwait initially before moving into Iraq, this opportunity was not available for OEF deployments. Units and personnel were deployed directly into the operational environment. One interview subject suggested that this direct deployment virtually eliminated acclimation time. Given the suggestion (mostly from IDA-conducted interviews) that RC elements may have taken somewhat longer in-country to become effective, it seems surprising that this issue was not prevalent in the OEF-specific CSI OLE interviews.

Within the RC member interviews, a number of specialized functions were identified as either being heavily manned by RC personnel or that benefitted from the presence of such personnel. Principal among these specialized functions were those of the ADTs and PRTs. Multiple individuals commented that providing ADTs throughout the entire DOD was simply not possible without the civilian skill sets and experiences that were found only in the RC. In addition, these teams seemed to cut across both components and Services, with multiple mentions of those serving coming from the Navy, Air Force, and Marines. Civilian skill sets were called out in one other unique aspect. Interview subjects mentioned the command elements' inability to make best use of specialized capabilities (ADTs and PRTs) and civilian skills—that more command elements needed training for how these capabilities could be put to best use.

Differences in tone stood out in this set of interviews. As we saw with the oral histories, much more characterization of the operating environment was part of the OEF interviews. A substantial number of negative commentaries regarding performance reflected no lack on the part of the personnel, equipment, or training but rather the challenges that OEF presented. Secondly, substantially more references were made to the challenges involved in using non-Army personnel. Multiple research participants reflected on the performance differences of other Service personnel when serving with Army. It is unclear whether this mention reflects an operational difference (greater use of Joint Task Force (JTF) structures in Afghanistan) or is due to some other factor.

Several research participants suggested that civilian skills were particularly valuable in Afghanistan's complex social environment. One particularly salient comment was that RC personnel would often surprise civilians by disproving the myth of soldiers as a bunch of "knuckle draggers."

Notable commonalities within the CSI-OLE OIF interviews:

- Training issues with respect to being required to requalify on basic skills. There was "reluctance for them [AC validators/training support battalions] to certify any training that did not occur at the mob site that they did not supervise." IDA's OIF report noted that this situation may have contributed to having less time to train at the collective level. To the extent that mobilization was mentioned as an issue, predictability in mobilization scheduling seemed to be a primary concern.

Substantial differences within the CSI-OLE OIF interviews:

- The discussion of RC problems concerning integration with higher echelons and Headquarters (HQ) integration was limited. However, a number of interview subjects did mention highly complicated command structures in OEF, which may have meant that ACs and RCs shared some integration issues.
- Mobilization issues were rarely mentioned as important. OIF interviews indicated weaknesses in training facilities for pre-mob training. These comments were entirely lacking in the OEF interviews.
- The issue of breaking up Guard units once in theater and the attendant effects upon unit cohesion were more common comments in the OEF interviews.

E. Overall Impressions

Generally, RC contributions in Afghanistan, as reflected in the interviews and oral histories, are more focused on augmentation of AC units (whether RC units attached to AC units and task forces or individuals acting as IAs) or on providing personnel to meet required specific niche capabilities (e.g., ADTs). The OEF interview commentaries did not provide anything comparable to the OIF interview commentaries on RC full-spectrum operations.

In contrast to OIF, the OEF interviews had more discussions about the challenging operational environment, particularly the human terrain. While some of this discussion was part of the Iraq interviews, it was much more extensive in the Afghanistan interviews, and this commentary makes identifying issues related to component performance differences difficult.

The previous (OIF) analysis indicated that "most derogatory comments, even when directed at RC personnel or units, were not solely attributable to characteristics of the RC. They were, instead, substantially attributable to the circumstances of deployment and employment of the force."[23] This statement seems to be even more valid with respect to

[23] Adams et al., *Sharing the Burden and Risk,* B-12.

OEF. While most of the issues that were identified in the OIF analysis were also relevant to Service personnels' experiences with OEF, the magnitude of those issues is markedly diminished. Concerns regarding differences in readiness standards and mobilization processes between components were substantially less discernable. Cross-component familiarity, while raised, was not a serious concern as the campaign progressed. Discipline and professionalism issues were almost entirely absent. Issues that were of marginal concern within the OIF analysis, unless clearly intended as blanket statements across all RC employment, were almost never addressed in the OEF-specific interviews.

A substantial portion of the interview subjects had experiences with both operations and, as a consequence of the substantially larger OIF footprint, most individuals would have experienced their Iraq deployment(s) before experiencing an Afghanistan deployment. A common takeaway from the OIF efforts was that initial mobilization, training, and employment processes were improved upon and that later deployments experienced fewer issues. This improvement may partially account for the difference between these two analyses.

Mobilization issues (timing, predictability, sourcing, and so forth) were significantly less notable in this (OEF) analysis. Highlighted issues, primarily within the IDA-conducted interviews, tended to be common to OEF and OIF. Nothing was specifically identified as stemming from or disproportionately affecting OEF. The general impression was that mobilization issues did not become prevalent until the much larger demand surge from OIF. The only unique point in this analysis was a single comment mentioning difficulties encountered in the demobilization processes for the NG. Because deploying Guard forces often used units from multiple states, the processes for returning equipment from theater to the units' home states were complicated.

Training deficiencies, with respect to the OEF area of operation (AO), were highlighted by the AC and RC. Despite the fact that OEF interview subjects spent more time highlighting the operational environment, a corresponding increase in commentary about the inadequacy of operation-specific training was not a part of their interviews. The one area of difference focused on training for special capabilities (e.g., female engagement teams, PRTs, and ADTs), which was generally considered inadequate by those taking part in these missions and by those commanders/staffs that were tasked with making use of them.

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5. Research Findings and Recommendations

In this chapter, IDA integrates assessments from the SIGACTs, air strike data, and interrogation of interviews to presents research findings. Whenever possible, the assessments from the previous OIF analyses are also compared and contrasted since these assessments help to illuminate whether the finding is applicable to the OIF and the OEF campaigns or whether the finding is particular to OEF.

A. Findings

The following is a list of research findings with explanations.

1. Analysis of Aggregated Tactical Level Data Depicted No Sizeable Differences between AC and RC Forces in Measurable Metrics

Analyses of SIGACTs and air strikes depict that RC forces were doing exactly what they were being tasked to do, without sizeable differences in performance from that of their AC counterparts. These analyses are consistent with the assessments of OIF data, which also considered mobility data, and depicted no statistically significant differences in operational performance. Analyses continue to depict a shared burden and shared risk between AC and RC forces in these two operational campaigns.

2. Leaders Were Generally Pleased with RC Contributions and Performance in Support of OEF

Like the operational assessments of OIF, RC contributions and performance met the intent of leaders at the strategic and operational levels in OEF. In this current assessment, comments recognize that leaders were also pleased with RC contributions at the tactical level, with little or no difference from AC counterparts. Again, research participants highlighted that the Nation could not have conducted the long OEF/OIF/OND campaigns and other global commitments while still preserving the all-volunteer force (AVF).

3. DOD Was Not Well Prepared for Large-Scale Mobilizations

Research participants and archived interviews described how mobilization challenges did not occur during OEF until the large-scale mobilizations demanded by the OIF campaign. As highlighted by OIF study participants, general knowledge regarding the use of

RC forces, including mobilization authorities, was initially lacking but that knowledge improved over the years of the OIF and OEF campaigns.

4. The Operational Environment and Pre-Deployment Training Was a Concern for the AC and the RC; Equipment Shortages Were a Concern for the RC

Research participants and archived interviews described the concerns of AC and RC forces related to the OEF operational environment and how pre-deployment training did not necessarily prepare forces for this unique environment. In general, the expressed sentiment was that the preparation of forces to fulfill special capabilities (e.g., female engagement teams, PRTs, and ADTs) was generally deemed inadequate. These capabilities did not reside in the force, doctrine did not exist regarding the creation and training of these capabilities, and these capabilities had to be created in an ad hoc manner. When one focuses on the preparation of the RC force (e.g., in IDA's previous work looking at the management of regionally oriented organizations and individuals), the extent to which any specialized training (e.g., foreign language) was made available to members of the RC was undetermined since these opportunities were usually only made available to the RC when AC training slots were not filled.[24] As previously identified in the OIF study, equipment shortages were a concern for mobilizing and deploying RC forces, and these shortages limited the training time and exposure to the systems being employed by the AC.

5. Relationships between the AC and the RC Mattered

According to research participants and archived materials, individuals and organizations from the RC were purposefully selected and employed during OEF and OIF. Lack of component familiarity arose as a discussion point, particularly as it related to the earlier years of the OEF campaign. As relationships between members of different components developed over the years due to training and repeated deployments, one no longer saw the subject of component familiarity surface during interviews. "Indistinguishable" became the expressed sentiment between components.

6. Operational Performance Data Was Not Systematically Collected and Archived DOD-Wide

As highlighted in the OIF study, IDA had to use a variety of data from disparate sources to approach the question regarding RC operational effectiveness in OEF. While sources would indicate that some of these data were collected at various times, IDA could not find a central repository or organization that maintained operational performance data

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[24] Joseph F. Adams et al., *Enhancing and Managing Regionally Oriented Individuals and Organizations*, IDA Paper P-5161 (Alexandria, VA: Institute for Defense Analyses, June 2014).

of the OEF campaign. Therefore, IDA had to rely on SIGACTs, air strike data, and interviews (whether archived or conducted by IDA analysts).

B. Recommendations

The following recommendations reinforce the broader list of recommendations previously described in the OIF study.

1. Use of RC Forces Should be a Major Topic of Service and Joint Professional Military Education (JPME)

As highlighted in the OIF paper, DOD conducts operations as a joint, combined, total force. Therefore, all military leaders should have more than just a basic knowledge of mobilization authorities and duty statuses for the RCs of all Services and the benefits and limitations associated with each. For OEF, DOD also operated as part of a NATO force, so knowledge on the employment of all forces, including RC forces, merit significant discussion during JPME, especially when research participants highlighted concerns regarding component familiarity during the early years of OEF.

2. Infrastructure Readiness for Mobilizations Should be Reported to the Extent Possible

While not necessarily highlighted during the early phases of OEF, DOD was not well prepared for the large-scale mobilizations required to commence and sustain OIF. DOD should have informed knowledge regarding its ability to conduct large-scale mobilizations and the risks associated with these operations. Therefore, DOD should establish policy and incorporate it into readiness reporting systems.

3. DOD Should Prioritize All Opportunities for AC and RC Engagement and Exercise Mobilizations to Promote Greater Trust and Confidence Across All Components

Years of mobilization and deployment institutionally addressed any component familiarity concerns, but, without such mobilizations, DOD risks having a future generation of leaders who lack component familiarity. JPME, Professional Military Education (PME), exercises, training center rotations, and current operations should involve a heavy mix of AC and RC leader representation. In the absence of mobilizations and deployments, DOD should institutionalize exercise mobilizations that will educate, train, and assess mobilization procedures and policy.

4. To the Extent Possible, RC Forces Should Have Opportunities for the Same Training and the Same Systems and Equipment as Their AC Counterparts

The sentiments of the AC and RC members reflected concern over pre-deployment training for the OEF operational environment. Therefore, to the extent possible, whatever training opportunities are afforded to the AC should also be afforded to the RC. In addition, to the extent possible, RC forces should have the same equipment and systems as their AC counterparts for training and knowledge development. Training with the same equipment and systems would enable more effective and more efficient integration and operational use of RC capabilities.

5. DOD Should Ensure That Operational Performance Assessments for All Operations Are Captured and Maintained by the Joint Staff

As highlighted during the OIF research, capturing these data during operations, as stated in joint doctrine, will permit objective, quantitative assessments of performance and, perhaps, provide additional information that is useful for joint operational planning. Lessons learned are already being captured and are in various levels of synthesis by the Joint and Coalition Operational Analysis (JCOA) Division of the Joint Staff J7. IDA recommends that the J7 establish a repository of operational performance data and provide guidance for the implementation and collection of such data. The J7 should also establish, inspect, and enforce DOD-wide standards for data storage. Examples of data that should be included in the repository are the SIGACTs and mobility and aviation strike data used in this research and other operational performance data that are captured by the Services and CCMDs.

Appendix A.
Research Participants

The following represents a partial list of research participants interviewed in support of this project.

Table A-1. Partial List of Research Participants Interviewed

Affiliation	Name	Organization
Navy	Admiral William Fallon	Retired United States Navy four-star admiral
Navy	Admiral John Harvey	Commander, United States Fleet Forces Command; Chief of Naval Personnel; Commander, Cruiser-Destroyer Group Eight/Theodore Roosevelt Strike Group
Navy	Admiral Michael Mullen	Chairman of the Joint Chiefs of Staff; Chief of Naval Operations
Navy	Vice Admiral Robin Braun	Chief, Navy Reserve
Navy	Vice Admiral John Cotton	Chief, Navy Reserve
Navy	Vice Admiral Dirk Debbink	Chief, Navy Reserve
Navy	Vice Admiral Lowell "Jake" Jacoby	Director, Intelligence, (J2) the Joint Staff; Director, Defense Intelligence Agency
Navy	Rear Admiral Sandy Adams	Deputy Commander, Navy Expeditionary Combat Command
Navy	Rear Admiral Paul Becker	Vice Director of Intelligence, the Joint Staff
Navy	Rear Admiral Michael Broadway	Commander, Navy Intelligence Reserve Command
Navy	Rear Admiral Tony Cothron	Commander, United States European Command Joint Analysis Center; Director of Naval Intelligence
Navy	Rear Admiral Samuel Cox	Commander, Office of Naval Intelligence and Director, National Maritime Intelligence Integration Office
Navy	Rear Admiral Kelvin Dixon	Deputy Commander, Navy Surface Force Atlantic
Navy	Rear Admiral Albert Garcia	Commander, Task Force Charlie, Marine Expeditionary Force Engineering Group
Navy	Rear Admiral Ann Gilbride	Director, National Maritime Intelligence Center
Navy	Rear Admiral Daniel MacDonnell	Commander, Information Dominance Corps Reserve Command
Navy	Rear Admiral James Manzelmann	Commander, Naval Reserve Intelligence Command
Navy	Rear Admiral Thomas Marotta	Deputy Commander, Naval Forces, United States Central Command
Navy	Rear Admiral Gene Price	Deputy Commander, United States Fleet Cyber Command/10th Fleet
Navy	Rear Admiral Rick Porterfield	Director, Naval Intelligence
Navy	Rear Admiral David "Gordon" Russell	Commander, Information Dominance Corps Reserve Command

Affiliation	Name	Organization
Navy	Rear Admiral Robert Sharp	J2, United States Special Operational Command
Navy	Rear Admiral Elizabeth Train	Director, National Maritime Intelligence Integration Office
Navy	Rear Admiral Eric Young	Commander, Naval Reserve Forces Command
Navy	Rear Admiral Matthew Zirkle	Commander, Submarines North Atlantic Treaty Organization (NATO); Deputy Chief of Staff, Submarines, NATO Allied Maritime Command
Navy	Captain Sean Butcher	Commander, Helicopter Sea Combat Squadron 84
Navy	Captain James “Buddy” Iannone	Commander, Helicopter Wing Reserve
Navy	Captain Stephen Wisotzki	Commander, SEAL Team 1; Commander, Naval Special Warfare Team, Iraq
Navy	Mr. Alfred Gonzalez, Jr.	Director, Personnel Allocation and Development, United States Fleet Forces Command
Navy	Honorable Hansford Johnson	Assistant Secretary of the Navy (Installations and Environment)
Marine Corps	General James Conway	Commandant of the Marine Corps; Commander, I Marine Expeditionary Force
Marine Corps	General Michael Hagee	Commandant of the Marine Corps
Marine Corps	General Peter Pace	Chairman of the Joint Chiefs of Staff; Vice Chairman of the Joint Division Chiefs of Staff
Marine Corps	Lieutenant General Jan Huly	Deputy Commandant, Plans, Policies and Operations
Marine Corps	Lieutenant General Dennis McCarthy	Assistant Secretary of Defense for Reserve Affairs; Commander, Marine Forces Reserve
Marine Corps	Lieutenant General Rex McMillian	Commander, Marine Forces Reserve
Marine Corps	Lieutenant General Richard Natonski	Commander, Marine Forces Command; Deputy Commandant, Plans, Policies, and Operations; Commander, 1st Marine Division
Marine Corps	Major General Vincent Coglianese	Assistant Deputy Commandant, Installations and Logistics (Plans)
Marine Corps	Major General Richard Huck	Commander, 2nd Marine Division
Marine Corps	Major General Thomas Jones	Commander, Training and Education Command
Marine Corps	Major General Douglas Stone	Commander, Operation Iraqi Freedom Detention Task Force
Marine Corps	Brigadier General Julian Alford	Commander, 3rd Battalion, 6th Marine Regiment
Marine Corps	Colonel Mark Cancian	Chief, Reserve Combat Assessment Team
Air Force	General Mike Hostage	Commander, Air Combat Command; Commander, United States Air Forces Central Command
Air Force	General John Jumper	Air Force Chief of Staff
Air Force	General Craig McKinley	Chief of the National Guard Bureau; Director, Air National Guard
Air Force	General Richard Myers	Chairman of the Joint Chiefs of Staff
Air Force	General Norton Schwartz	Air Force Chief of Staff; Commander, United State Transportation Command; Director, Joint Staff
Air Force	Lieutenant General Stanley Clarke	Director, Air National Guard
Air Force	Lieutenant General James Jackson	Chief, Air Force Reserve

Affiliation	Name	Organization
Air Force	Lieutenant General Jeffrey Lofgren	Deputy Chief of Staff, Capability Development, Headquarters Allied Command Transformation, NATO. Deputy Commander, United States Air Forces Central Command; Commander, 380th Air Expeditionary Wing
Air Force	Lieutenant General Glenn Spears	Commander, 12th United States Air Force; Deputy Commander, United States Southern Command
Air Force	Lieutenant General Charles Stenner, Jr.	Chief, Air Force Reserve
Air Force	Major General H. Michael Edwards	The Adjutant General, Colorado
Air Force	Major General Vincent Mancuso	Mobilization Assistant to the Chief of Staff
Air Force	Major General Maryanne Miller	Deputy to the Chief, Air Force Reserve
Air Force	Major Genera Brian Neal	Deputy Director, Air National Guard
Air Force	Major General Martha Rainville	The Adjutant General, Vermont
Air Force	Colonel Nathan Green	Commander, Air Force Special Operations Air Warfare Center; Commander, 752nd Special Operations Group
Army	General George Casey	Army Chief of Staff; Commander, Multi-National Force-Iraq
Army	General Pete Chiarelli	Vice Chief of Staff of the Army; Commander, Multi-National Corps-Iraq; Commander, 1st Cavalry Division
Army	General Frank Grass	Chief of the National Guard Bureau
Army	General David Petraeus	Commander, United States Central Command; Commander, Multi-National Force-Iraq; Commander, Multi-National Security Transition Command-Iraq; Commander, 101st Division
Army	General Pete Schoomaker	Army Chief of Staff; Commander, United States Special Operations Command
Army	Lieutenant General Steven Blum	Chief of the National Guard Bureau
Army	Lieutenant General Dan Bolger	Deputy Chief of Staff, Army Operations; Commander, 1st Cavalry Division
Army	Lieutenant General Claude Christianson	Director for Logistics J4, the Joint Staff; Army Deputy Chief of Staff for Logistics
Army	Lieutenant General Richard Formica	Commander, Combined Security Assistance Command – Afghanistan; Joint Fires and Effects Coordinator/Force Field Artillery Commander, Multi-National Corps – Iraq
Army	Lieutenant General Anthony Lerardi	Director, Force Structure, Resources, and Assessment, J8, the Joint Staff; Commander, 1st Cavalry Division; Deputy Commander, Combined Security Transition Command – Afghanistan
Army	Lieutenant General Joseph Inge	Deputy Commander, United States Northern Command; Commander, 1st United States Army
Army	Lieutenant General Timothy Kadavy	Director, Army National Guard; The Adjutant General, Nebraska
Army	Lieutenant General James Lovelace	Commander, 3rd United States Army/Army Central; Deputy Chief of Staff, Army Operations
Army	Lieutenant General Mitchell Stevenson	Army Deputy Chief of Staff for Logistics; Commander, United States Army Combined Arms Support Center

Affiliation	Name	Organization
Army	Lieutenant General Jack Stultz	Chief, Army Reserve; Commander, 143rd Transportation Command
Army	Lieutenant General Jeffrey Talley	Chief, Army Reserve; Commander, 926th Engineer Brigade
Army	Lieutenant General William Webster	Commander, 3rd United States Army/Army Central; Deputy General, United States Northern Command; Commander, 3rd Infantry Division
Army	Sergeant Major Mark Bowman	Command Sergeant Major, Combined Joint Task Force Phoenix; Command Sergeant Major, 33rd Infantry Brigade Combat Team
Army	Sergeant Major Anthony Wright	G4 Sergeant Major, United States Army Central; Command Sergeant Major, 407th Brigade Support Battalion, 2nd Brigade Combat Team, 82nd Airborne Division
Army	Major General Allan Elliott	Assistant Deputy Commander, United States Army Material Command; Chief, Coalition J4, International Security Assistance Force, Kabul, Afghanistan
Army	Major General John Ferrari	Director, Program Analysis and Evaluation, Army; Deputy Commander, Combined Security Transition Command – Afghanistan
Army	Major General Corey Carr	The Adjutant General, Indiana; Commander, 76th Infantry Brigade Combat Team
Army	Major General John Gronski	Commander, 28th Infantry Division; Deputy Commander, United States Army Europe
Army	Major General Jeffrey Hammond	Commander, 4th Infantry Division; Director, Operations, Readiness, and Mobilization, Department of the Army
Army	Major General Gus Hargett	The Adjutant General, Tennessee
Army	Major General Chip Long	The Adjutant General, Virginia
Army	Major General Fred Reese	Deputy Assistant Secretary, Army Training, Readiness, and Mobilization; The Adjutant General, Oregon
Army	Major General Rick Sherlock	Assistant Division Commander, 98th Division
Army	Major General Michael Smith	Deputy Chief, Army Reserve
Army	Major General Joseph Taluto	The Adjutant General, New York; Commander, 42nd Division
Army	Brigadier General Ivan Denton	Director, National Guard Bureau Manpower and Personnel; Commander, 219th Battlefield Surveillance Brigade; Commander, 1st Battalion, 293rd Infantry Regiment
Army	Colonel James Jennings	Commander, 1st Armored Division Sustainment Brigade; Commander, 407th Brigade Support Battalion, 2nd Brigade Combat Team, 82nd Airborne Division
Army	Colonel Craig Ono	Surgeon, Army Reserve
Army	Colonel Don Randle	Commander, 2nd Battalion, 20th Special Forces Group
Coast Guard	Rear Admiral John Acton	Deputy Commander, Mobilization and Reserve Affairs
OSD	Honorable Dr. David Chu	Under Secretary of Defense, Personnel and Readiness

Affiliation	Name	Organization
OSD	Honorable Michael Dominguez	Principal Deputy Under Secretary of Defense, Personnel and Readiness; Assistant Secretary of the Air Force, Manpower and Reserve Affairs
OSD	Honorable Thomas Hall	Assistant Secretary of Defense, Reserve Affairs
OSD	Honorable Paul McHale	Assistant Secretary of Defense, Homeland Defense
OSD	Ms. Elizabeth Wilson	Executive Director, Department of Defense – Department of Veterans Affairs Collaboration Office
OSD	Mr. Daniel Feehan	Principal Deputy Assistant Secretary of Defense, Readiness
OSD	Ambassador Ronald Neumann	United States Ambassador to Afghanistan
OSD	Lieutenant General Lawrence Nicholson*	Commander, III Marine Expeditionary Force; Commander, 2nd Marine Expeditionary Brigade; Operations Officer, International Security Assistance Force Joint Command

* via written response to questions

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Appendix B.
Illustrations

Figures

Tables

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Appendix D.
Abbreviations

9/11	11 September 2001
AC	active component
ADT	agricultural development team
AEW	Air Expeditionary Wing
AF	Air Force
AFPAK Hands	Afghanistan-Pakistan Hands Program
AGM	Air to Ground Missile
ANG	Air National Guard
AO	area of operation
AOR	area of responsibility
ARNG	Army National Guard
AVF	all-volunteer force
BCT	brigade combat team
BDA	Battle Damage Assessment
BOG	boots on the ground
CAOC	Combined Air Operations Center
CAOCL	Center for Advanced Operational Culture Learning
CCMD	combatant command
CENTCOM	United States Central Command
CP	checkpoint
CSI	Combat Studies Institute
CTS	Contingency Tracking System
DCAS	Defense Casualty Analysis System
DMDC	Defense Manpower Data Center
DOD	Department of Defense
EIA	enemy-initiated attack
EOF	escalation of force
F/C	found and cleared
FSO	full-spectrum operations
GAO	Government Accountability Office
GPS	Global Positioning System
HEI-T	high explosive incendiary with tracer
HQ	Headquarters
IA	individual augmentee
ID	identification
IDA	Institute for Defense Analyses
IED	improvised explosive device
J2	Director of Intelligence in a Joint Organization
JCOA	Joint and Coalition Operational Analysis
JIEDDO	Joint Improvised Explosive Device Defeat Organization
JMD	Joint Manning Document

JPME	Joint Professional Military Education
JTAC	Joint terminal attack controller
JTF	Joint Task Force
KIA	killed in action
LAR	light armored reconnaissance
MAT	MISREPAnalysis Tool
MCO	Major Combat Operations
MEDEVAC	Medical Evacuation
MGRS	Military Grid Reference System
MISREP	mission report
MOI	measure of interest
NATO	North Atlantic Treaty Organization
NG	National Guard
OCR	optical character recognition
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OIR	Operation Inherent Resolve
OLE	Operational Leadership Experiences
OND	Operation New Dawn
ONE	Operation Noble Eagle
OP	observation post
OSD	Office of the Secretary of Defense
PACC	Pakistan-Afghanistan Coordination Cell
PME	Professional Military Education
PRT	provincial reconstruction team
PSYOP	psychological operations
RAID	Redeployment Assistance Inspection Detachment
RC	reserve component
RFPB	Reserve Forces Policy Board
SAC	Systems and Analyses Center
SAFIRE	surface-to-air fires
SEAL	Navy Sea, Air, and Land
SIGACT	significant activity
SOF	special operations forces
THOR	Theater History of Operations Reports
U.S.	United States
Unk	Unknown
USAF	United States Air Force
USAFR	United States Air Force Reserve
USAR	United States Army Reserve
USDOS	United States Department of State
USMC	United States Marine Corps
USMCR	United States Marine Corps Reserve
USN	United States Navy
USNR	United States Navy Reserve
UTM	Universal Transverse Mercator

WGS	World Geodetic System
WIA	wounded in action

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