

Appendix 2: Iraqi Combatant and Noncombatant Fatalities in the 1991 Gulf War

INDEX

1. Iraqi civilian fatalities in the 1991 Gulf War
2. Iraqi military personnel killed during the air war
3. Iraqi military personnel killed during the ground war
4. Buried alive: 1st Division breaching operations
5. The “Highway(s) of Death”

Sources

We accept 3,664 (rounded to 3,500+) as an estimate of the number of Iraqi civilians killed in the 1991 Gulf War. Regarding military personnel, we estimate that between 20,000 and 26,000 were killed in the conflict.

1. Iraqi civilian fatalities in the 1991 Gulf War

The estimate for civilian deaths is based on a study conducted by Beth Osborne Daponte, a former Census Bureau analyst and currently a senior research scientist at Carnegie Mellon University (Daponte 1993). With regard to civilian casualties directly attributable to the war, the study builds on earlier research conducted by Humans Rights Watch shortly after the war (HRW 1991). The HRW estimate of 2,500 to 3,000 Iraqi civilians killed in the war was based on eyewitness reports, although no claim was made that the survey was comprehensive. From this source Daponte compiled a database of 2,665 deaths, after removing duplicate reports. Subsequently, she checked this on a province by province basis against the official Iraqi records of 2,278 civilian deaths from the war. Overall it appeared that the Iraqi government had *undercounted* the civilian death toll, although this was not systematic. In some governorates (provinces), the official count was higher -- and in these cases Daponte added the “excess” cases to the total. The combined total was 3,664.

Turning to Iraqi military casualties in the 1990-1991 Gulf War: we conclude that between 20,000 and 26,000 were killed. These resolve into several categories: ground troops killed in the air war, other military personnel killed at fixed military installations, personnel killed in the air or at sea, and personnel killed during the ground war and after the cease-fire.

2. Iraqi military personnel killed during the air war

Estimates for the casualties imposed by coalition air power on Iraqi divisions in the theater of operations are based on interviews with captured Iraqi officers, which found average unit losses of 2.5 percent (Aspin and Dickinson 1992; Keaney and Eliot Cohen 1993; Gordon and Trainor 1995, pp. 351-352). *Using 360,000 as a baseline for the number of Iraqi troops actually in the theater, we accept an estimate of 9,000 Iraqi field troops killed during the air war* (which is the figure that the Aspin/Dickinson report suggests).

Apart from field units, however, air power also struck at numerous other military targets: airfields, military bases and depots, air defense sites throughout Iraq, and command and control facilities. All told, more than 2,000 such fixed targets existed and they absorbed between 8,000 and 9,000 strikes. Almost one-third of these targets were airfields and these absorbed about 30 percent of the strikes flown against fixed military targets. Also numerous were small air defense installations. How many casualties this category of strikes produced is unknown. Attacks on airfields, *per se*, and on small air defense sites may have produced relatively few. Return visits to sites already bombed may have produced none. However, the sites targeted could have housed or employed 150,000 personnel all together. *Here, we assume an average number of fatalities per target ranging between 1.5 and 3 personnel, which yields between 3,000 and 6,000 additional military fatalities.*

During the war Iraq lost 41 combat aircraft and helicopters in flight. It also lost approximately 60 naval vessels, although most of these were in dock. *We conservatively assume that less than 100 fatalities were associated with aircraft in flight and ships at sea.* (Losses of air defense personnel and of other air force and navy personnel at bases are included in the previous estimate).

3. Iraqi military personnel killed during the ground war

We conclude that between 8,000 and 10,500 were killed in ground force operations, while the Gulf War Air Power Survey concluded that the ground war “total could easily have been as high as 10,000” (Keaney and Cohen, GWAPS, 1993, p. 249, ft. 19).

Our estimate of Iraqi casualties in the ground war comprises several subordinate estimates:

- As many as 250 Iraqis were killed in probing attacks and artillery exchanges before the start of the ground war;
- More than 200 were killed in the 29 January - 1 February “Battle of Kafji” (including action against three Iraqi brigades);

- Between 800 and 1,250 were killed in preparatory artillery barrages and breaching operations at the start of the ground war (including 250-500 buried alive in their trenches);
- Between 800 and 1,000 were killed in the 25-27 February “highway of death” incidents (which are addressed separately in an Appendix to this report);
- 700 or more were likely killed in the controversial post-war attack on a military caravan of 600+ vehicles near the Rumaila oilfields; and
- 5,500-7,000 were killed in other battles and engagements -- the “ground war” proper -- conducted by the USMC and Army XVIII and VII corps (in conjunction with allied forces).

Ground operations conducted between 24 and 28 February included 8 substantial battles between US coalition forces and Iraqi units of battalion-size or larger offering stiff resistance (Press 2001; Biddle 1996). Numerous smaller engagements occurred as well. With regard to these battles and engagements, our estimates of Iraqi personnel losses are based on data from several battles that have been carefully reconstructed by the US Army and independent military analysts and -- extrapolating from these to other cases -- on the size of the Iraqi units engaged, the extent of equipment destruction they suffered while engaged in battle, and the observations of US commanders and Iraqi POWs recorded in US military historical documents. A careful and detailed Army reconstruction of the Battle of 73 Easting, for instance, found that 590 Iraqis had been killed in an engagement between a battalion-sized US unit and a brigade-sized Iraqi one (Biddle 1996, Burns 1991). Also, coalition artillery ammunition expenditure rates were sufficient to kill between 3,000 and 7,000 personnel, assuming that Iraqi forces were relatively well dug-in at the start of the ground war, fairly dispersed, and already substantially depleted by air interdiction and desertion. Some of these artillery deaths (between 1,000 and 1,500) would have occurred before coalition ground forces crossed the border in strength; others would have been counted among the losses associated with individual battles.

Among the estimates made above, several may be controversial. Previous estimates of the numbers killed in the “highway of death” incident(s) outside Kuwait City range from 200-300 to “tens of thousands”. Our choice of 800-1000 is explained in a subsequent section. Also controversial are estimates of the number of Iraqis buried alive by bulldozers of the US 1st Infantry Division during breaching operations on the first day of the Gulf War. Previous estimates range from less than 100 to “thousands”. By contrast, we have accepted 250-500 as a range that best reconciles the available testimony and evidence.

4. Buried alive: 1st Division breaching operations

The higher end estimates for the numbers of Iraqi combatants buried alive derive from an off-the-cuff statement by the commander of one of the two brigades who said that “thousands” might have been buried “for all I know.” The commander of the other brigade made different estimates at different times: 80-250 and 650 buried. The division commander, Maj. Gen. Thomas Rhames, told a press conference that as many as 400 might have been buried. Significantly, none of the officers interviewed seemed especially defensive about the operation. However, a captain who ordered part of the assault (and was quite distraught in its aftermath) estimated later that he could have killed hundreds (Zmirak 2002). A similarly distraught sargent, still troubled ten years later by dreams of being buried alive, thought thousands might have been entombed (Berstein 2001).

A classified (secret) log made by division officers at the time of the incident noted that only 150 enemy soldiers had been buried (Gordon and Trainor 1995, p. 383 and ft. 18-6.). (The log also stated that the division took only 500 prisoners on the day of the assault, although others might have been taken by a neighboring British division.)

Some Iraqis were able to flee the area -- a significant fact in itself (O’Kane 1995). One Iraqi who did retreat and witness the bulldozing from a safe distance estimated that 300 of his comrades must have been buried along the immediate section of the trench line -- probably constituting a battalion position (or 11 percent of the total). (As we will see, the Iraqi’s numerical estimate might actually have reflected the total number of Iraqi troops still alive and present in the area when the assault began.) The Iraqi also claimed that the plows cut down some troops who had exited the trenches and were attempting to surrender. As is made clear in an interview with a sargent who drove one of the plows (either a tank with plow attached or a combat earth mover), those driving the equipment could see little of what was immediately in front of them (O’Kane 1995).

High-end estimates often also make reference to the fact that the authorized strength of the Iraqi unit under attack (the 26th Infantry Division) was 8,000 and that less than 2,000 Iraqis had surrendered (some from neighboring divisions). However, few if any Iraqi units in the theater actually deployed at full strength and all subsequently lost a fair portion of their personnel to desertion and aerial bombardment.

The average deployed strength of Iraqi ground units in the theater was only 66 percent of authorized strength; average loss to desertion was 42 percent of deployed strength; average loss to aerial bombardment was 2.5 percent of deployed strength (Aspin and Dickinson 1992). In some cases desertions were as high as 50 percent and fatalities due to air power were 6 percent. Those personnel injured by air power comprised as much as 16 percent of deployed personnel in extreme cases -- and, early in the air war, many of these would have been evacuated.

Those Iraqi units in trench lines along the Saudi border were among the ones most heavily depleted by air power. At the time of the ground assault, the Iraqi 26th division was judged by CENTCOM to have lost more than 25 percent of its initial fighting effectiveness to aerial bombardment, although this does not translate directly into troop strength; it is mostly a measure of equipment loss. At any rate, on the eve of the ground war, frontline units were subjected to napalm bombardment and heavy artillery barrages.

These factors combine to make it unlikely that there were more than 3,000 soldiers remaining alive and present in the Iraqi 26th Division when the breaching operation began. Subsequently, more than 500 of these -- and perhaps as many as 2,000 -- were taken prisoner. Some number also escaped the area. Also, it would have been unlikely that more than two-thirds of the available division personnel would have been in the forward trenches at any one time. Others would have been fulfilling vital functions in the division's rear area. These considerations support the hypothesis that hundreds -- not thousands -- were entombed by 1st division plows. Some of these Iraqis would have been in fighting shape; others dazed, confused, or injured from recent napalm and artillery assaults. Due to fear of chemical attack and the demanding pace of the planned offensive, the US 1st Division did not make loudspeaker appeals for surrender.

Low end estimates of the numbers buried alive derive from an Iraqi report of having recovered only 44 bodies in October 1991 (*AP*, October 1991). Although this number subsequently echoed for years in the US media and policy community (*PBS* 1996, Heidenrich 1993), the Iraqis had claimed to find more bodies by the end of 1991 -- 400 in all (*Xinhua* 1991). Some of these probably came from other sites, however (*AP*, November 1991). The official Iraqi version today is that "hundreds" were buried alive by the US 1st Division breaching operation, and this estimate is reflected in an Iraqi docudrama about the event (*BBC* 2000, *AFP* 2000).

Most of the informed estimates of the numbers buried alive during the breaching operation fall in the range of 150-650 Iraqis. However, here we accept a somewhat narrower range -- 250-500 -- because it better integrates official Iraqi claims and better represents a situation that could give rise both to a semi-official log of 150 buried and to multiple impressions that "hundreds" had been buried along different subsections of the line (which led some observers to infer that "thousands" must have been buried along the entire line).

5. The "Highway(s) of Death"

During the 1990-1991 Gulf War, 42 days of coalition air attack on dispersed and dug-in Iraqi ground forces produced an average fatality rate of approximately 2.5 percent, according to interviews with captured Iraqi officers (Aspin and Dickenson 1992). The baseline for this rate is 360,000 Iraqi troops *actually deployed* in the Kuwaiti Theater of Operations -- and not the assigned personnel of Iraqi units, which were significantly understrength. If desertions during

the air war (150,000) are taken into account (which gradually further reduced the number of Iraqis exposed to air attack), the rate of fatalities is more on the order of 3 percent. Much higher rates were achieved against forces when they concentrated or moved, which exposed them to efficient air attack. One example from the Gulf War is the attack on Iraqi convoys along the “highway of death” at the conflict’s end. Here we estimate that the personnel under attack suffered at least 6 to 10 percent fatalities in a 24 hour period, assuming that 10,000 Iraqis rode in the columns.

The “highway of death” attacks targeted Iraqi convoys leaving Kuwait as coalition forces closed on Kuwait City on 25-26 February 1991. Most newspaper coverage of the incidents cite the number of vehicles that were under attack as approximately 1,400 on the main highway north of Al Jahra and as many as 400 on the coastal road to Basra. The great majority of vehicles on the main road were civilian types -- including cars, buses, milk trucks, tractors, ambulances, and fire trucks -- commandeered by Iraqis. Indeed, only 28 were later identified from photographs by the CIA as being armored vehicles (CIA, 1993). On the coastal road, however, the majority of vehicles were military.

On the main highway, much of the destruction was concentrated along a two mile strip, although journalists reported seeing smoldering wreckage and bodies all the way from 5 miles outside Kuwait City to just short of the Iraq border -- a distance of more than 50 miles. Along the coastal road, destruction stretched intermittently for 50-60 miles. Although there were fewer wrecks along the coastal road than along the main, the extent of their destruction was greater.

How many Iraqis died in the attacks remains controversial. One high-end estimate asserts that “tens of thousands” of Iraqi soldiers were killed (Chediak 1991). Seemingly, this estimate was based on the low number of reported prisoners (450-500) and an estimation of how many Iraqis were riding in the convoys. Given approximately 1,800 vehicles, it is not unreasonable to assume that 10,000 Iraqis came under attack -- although the number of vehicles and the average number of riders could have been less. *Ipsa facto* this would preclude the possibility that tens of thousands were killed. Moreover, simple subtraction -- riders minus prisoners -- cannot yield a reliable estimate of fatalities because many Iraqis were witnessed fleeing the scene by Kuwaitis living in the area. At any rate, there was little reported evidence of vehicles having been filled to capacity with people. For instance: among those cases in which journalists reported finding corpses still in their vehicles, only a small fraction contained more than two.

The low-end estimate of the numbers killed in the attack is 200-300. This seems to originate with a *Washington Post* article (Coll and Branigin 1991) that asserted the source of the figure was reporters who had visited the scene. Subsequently, the *Post* estimate was cited in the official *Gulf War Air Power Survey (Summary Report, page 113, ft. 110)*, and by this route it gained quasi-official status. However, the estimate comports with the major news articles cited below only in the sense that two journalists report seeing hundreds of dead *while they were on the scene*

-- two days after the engagement occurred. While consistent with the possibility that only a few hundred total were killed, these statements when taken in context actually suggest a higher total (as argued below).

In the *Boston Globe*, Elizabeth Neuffer wrote that "mile after wreckage-jammed mile of highway appeared as if frozen in mid-battle.... And all along the way, allied soldiers worked, burying hundreds of dead in shallow graves." Neuffer also quotes an Army private at the main site of wreckage as saying that "there were simply hundreds of bodies". Relevant to burial activities is a photograph from another source that shows Iraqis being dumped in a group grave by means of a front-loader -- a scoop fixed to a truck (Turnley 2002)

Robert Fisk of the *Independent* claimed to have "lost count of the Iraqi corpses crammed into the smouldering wreckage or slumped face down in the sand" at the main site of wreckage. Traveling the main road almost all the way to the Iraqi border, he claimed to see "hundreds of mutilated corpses lining its route..."

Both Fisk and Neuffer also quote British officers of the 1st Battalion, Staffordshire Regiment, as saying that they had found and buried women and children at the site.

Gordon Airs of the UK *Press Association* wrote of seeing 40 bodies outside the Mutla police station, along the main road at the point where several hundred of the vehicles in the convoy had become ensnared in a quarter-mile long traffic jam. He quotes a US officer as saying, "We have taken out about 80 bodies from this tangled mess so far - but God knows how many are still in there." Airs further observes:

The few who managed to get north of the bottle-neck trap did not last long either. All along the highway lay wrecked and burned out military vehicles and civilian cars, most of which had been abandoned during the attacks. With even more bodies lying alongside the road. (Airs 1991)

Nearly two years after the event, a *Washington Post* reporter interviewed an Iraqi named Khaldoun who lived through the attack:

There were hundreds of cars destroyed, soldiers screaming," he said.... It was nighttime as the bombs fell, lighting up charred cars, bodies on the side of the road and soldiers sprawled on the ground, hit by cluster bombs as they tried to escape from their vehicles. I saw hundreds of soldiers like this, but my main target was to reach Basra. We arrived on foot. (Boustany 1993)

All of these are only partial, impressionistic snapshots. The journalists' direct observations reflect an only fleeting engagement with the destruction, two days after it occurred. While two

report seeing hundreds of bodies along the causeway, there would also have been bodies still in the wrecks -- "God knows how many" -- as well as bodies already buried. A fourth category would have been wounded who left the scene only to die elsewhere -- perhaps in the nearby swamps where some Iraqis had been taken prisoner. At one spot of concentrated destruction -- the head of the quarter-mile-long pileup near the Al-Mutla police station -- an officer reports having extracted 80 bodies from the wrecks "so far" and a private reports there being "hundreds" of dead. Perhaps one-third or one-fourth of the crashed and abandoned vehicles were at this bottle-neck; photographic evidence shows more than 300 hundred vehicles piled there (out of the 1,400 estimated total).

While the *Washington Post* estimate of 200-300 dead might fit the reports of bodies *actually seen* by reporters, it seems too low to also encompass the other categories of dead: those already buried, those unseen in the wreckage, and those who left to die elsewhere. A *minimum* toll of 500-600 dead is more plausible in accounting for all of what the journalists heard and saw. *At any rate, these reports concern only one of the two "highway of death" incidents.*

The other incident occurred to the east of the main one, along the smaller highway that passes northeast from Jahrah, past Sabiyah, and then north to Basra. Reporting on this engagement has been sparse and did not begin to emerge until 12 days after the events.

A group of journalists (including Michael Kelly who died tragically while covering the recent Iraq war) visited the site on 10 March. They recorded similar impressions: more than 400 vehicles -- mostly military in type -- destroyed in clusters of 10 to 15 spread along a 50 mile stretch of highway. Kelly reports seeing 37 bodies; a *Washington Post* team, "more than three dozen" (Branigin and Claiborne, *WP*, 11 March 1991). Bob Drogin of the *LA Times* reported, "scores of soldiers...in and around the vehicles, mangled and bloated in the drifting desert sands."

The vehicles themselves were "strafed, smashed, and burned beyond belief," according to Drogin. The team from the *Post* wrote that "T-55 tanks lay blown apart like Chinese firecrackers, their turrets and main gun barrels thrown 50 feet away and their hulking steel bodies disintegrated into pieces of shrapnel small enough to pick up with one hand." Kelley surmised that "the heat of the blasts had inspired secondary explosions in the ammunition. Some fires had been fierce enough to melt windshield glass into globs of silicone."

Unlike the attack on the main road, no vehicles seemed to escape destruction along the second highway of death. Drogin reported that every truck was "riddled with shrapnel." Kelley observed that

[T]hose who had driven alone, or even off the road and into the desert, had been hunted down too. Of the several hundred wrecks I saw, not one had crashed in panic; all bore the marks of having been bombed or shot. (Kelley, 1991)

That such a scene should yield only three dozen or even “scores” of dead seems unlikely -- although any subset of several of the clusters might reveal this many when examined closely. And, of course, the reporters were viewing the damage almost two weeks after it had occurred.

What distinguished the second attack from the first was the dispersion of vehicles in clusters spread across 50 miles. These might have been attacked one after the other without a generalized panic quickly communicating throughout the whole group. Not caught in a long traffic jam, as were their comrades to the west, the Iraqis appeared to have stayed with their vehicles and continued their flight -- only to be attacked in small clusters. Under attack, vehicles would break formation and drive off the road, only to be hunted down individually. Just as this form of dedicated attack produced a greater degree of vehicle destruction than was the case along the main highway, it would have generated a higher rate of casualties. (It was along this second highway of death that photojournalist Peter Turnley recorded one of the more gruesome images of the Gulf War: eight charred corpses frozen in death postures on the bed of a truck that had been hauling a howitzer. Two more incinerated corpses sat in the cab.)

An attack of the sort described above could easily have claimed 300-400 dead or even more from among a force of 2,000 -- a fatality rate of 15 to 20+ percent. (Using cluster munitions, the Israelis had achieved a comparable rate against a road-marching brigade of the Syrian 3rd Division during their 1982 war.) But the results on the second highway of death would have been spread across 20 or more vehicle clusters along 50 miles of road. Furthermore, in the 12 days that lapsed between the attack and the journalists’ visit, many of the dead might have been buried or taken away to mortuaries. Also, many of those left behind would have been pulled apart by wild dogs -- a process that was still underway when the reporters visited (as described by both Kelly and the *Washington Post* team).

In the attack on the main road convoy of 1,500 vehicles, destruction was first concentrated on the lead vehicles in order to block the convoys’ progress. Among these lead vehicles, the fatality rate would have been higher than it was farther down the line. Subsequently, the rest of the convoy, which stalled along the road, was attacked in repeated passes by aircraft over a number of hours -- perhaps as many as ten. But occupants would have likely fled these vehicle early in the attack, as panic spread down the line. Some survivors of the air attack were later engaged by direct fire from coalition ground units. Those vehicles that managed to evade the traffic jam and continue on the road north were interdicted individually. As a result, a sporadic line of destruction continued past the road jam and all the way to the border with Iraq (as reported by the *Independent*.) Assuming that 7,500 people rode in the main caravan, the hypothesized toll of at least 500 dead would reflect an average fatality rate of only 7 percent. Many of these would have been concentrated at the head and rear of the column.

Compared to the *Washington Post*’s estimate of 200-300 killed in the highway of death incidents, the above analysis suggests that a combined minimum of 800-1000 dead better reconciles the

available evidence -- notably: the various overlapping reports of hundreds of observed dead at the main attack site and the extent and character of destruction at the second.

As for the higher-end estimates of 10,000 or more killed during the incidents: such estimates are simply not consonant with the observed and reported numbers of dead -- even given the fact that reporters' observations were only partial in their coverage and somewhat late. For there to have been even 8,000 dead in the two incidents, there would have had to be at least 6,000 dead at the main incident, where journalists arrived two days after the engagement ended. But none claimed to see even five percent of this number of bodies or to hear or see indications that anything approaching this many had been found, buried, or moved. At any rate, there were not enough military personnel on the scene to have completed in less than two days the enormous task of extracting, collecting, and burying most of 6,000 bodies -- while also securing the area and processing prisoners. Only at the site of the second incident would there have been sufficient time to "police" the dead before journalists arrived.

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