Palestinian Weapons Deployed against Israel during Operation Cast Lead

Cataloging Palestinian weapons used against Israel during Operation Cast Lead (OCL) can only be done in broad terms for a number of reasons, among them: (1) resistance groups do not make public their holdings; (2) most estimates of their weapons caches are made by adversaries (in this case Israel, but also Fatah and the Palestinian Authority [PA]) and are therefore unreliable; (3) smuggling and black market trade in weapons have been features of Gazan life for years, if not decades; and (4) lines are often blurred between arms held by individuals, clans, and factions. Specifically with regard to OCL, gauging which and how many weapons Palestinians held is also difficult given the nature of the fighting and Israel's control of the media during operations. Israel did not provide or allow detailed reporting of its engagements or casualties inside Gaza for security and public relations reasons. Even reporting of Palestinian strikes inside Israel lacked detail.

Contrary to the impression given by some media, most of the Israeli casualties during OCL were incurred not by civilians hit by rocket and mortar fire in Israel, but by IDF soldiers, mostly as a result of small arms, grenade, and antitank weapons fire inside Gaza. (Two Israeli civilians were killed and 182 Israeli civilians were wounded by rocket and mortar fire in Israel, while 11 IDF soldiers were killed and 336 IDF soldiers were wounded in Gaza; 4 of the IDF dead and almost 10% of the IDF wounded were by friendly fire.) (See the casualty charts in this section for an explanation of these estimates.)

According to Israeli estimates, Palestinian forces on the ground at the time of OCL numbered about 15,000: up to 8,000 members of the Izzeddin al-Qassam Brigades, 6,000 members of the Executive Support Force (the Hamas-affiliated civil police; this is not exclusively Hamas and probably overlaps with the Qassam Brigades), and more than 1,200 special police (e.g., naval police, VIP security, internal security). This figure does not include an additional 3,000–4,000 members of other factions that fought alongside Hamas (including an estimated 1,000 Islamic Jihad members, several hundred al-Aqsa Martyrs Brigades members, and several hundred Popular Resistance Committee members).

Indeed, these combined forces outnumber the roughly 10,000 Israeli troops that took part in OCL. Clearly, the numbers by themselves mean little. Palestinian forces did not intensively engage the IDF in combat, and relatively few may have actually taken part in battle. Rockets and mortars were fired throughout the conflict, from Israel's opening air offensive on 27 December, but once Israel's ground incursion began on 3 January (launching stage 2 of OCL), Palestinian forces pulled back into dense urban areas where they would have the advantage of being on home ground in urban warfare.

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As stage 2 progressed, the IDF took control of open areas to reduce rocket and mortar fire and of suburban neighborhoods encircling towns and refugee camps (where some very heavy close-quarter fighting took place) to corral armed groups and attack them from a distance. Palestinian forces made forays out of built-up areas to engage IDF units, sniped at the IDF from inside urban areas, and attempted to lure IDF patrols deeper into towns and camps where they could be ambushed; the strategy was to save fire and manpower for an anticipated stage 3 of OCL that never came.

Israel debated opening stage 3, sending troops deep into urban areas and camps to deal Hamas a "knock-out blow" but ultimately decided the costs would be too high. Israeli military officials were well aware that the primary threat to soldiers would come on the ground from small arms fire, improvised explosive devices, and booby traps, and they warned Israel's security cabinet at every meeting that extending operations into built-up urban areas and refugee camps would dramatically prolong the operation, increase Israeli casualties, and reduce domestic support for the war.

The compendium below, compiled by Michele K. Esposito, is based on media reports released during OCL as sourced in the Chronology section of this issue of JPS*; previous* JPS *Chronologies, Peace Monitors, and Quarterly Updates since autumn 2001 (*JPS *122–50); and the additional sources listed at the end.*

Rockets and Mortars Fired into Israel

Palestinians fired an estimated 640 rockets and 162 mortars into Israel during Operation Cast Lead (OCL), killing 2 Israeli civilians with rocket fire and 1 Israel Defense Forces (IDF) soldier with mortar fire, and injuring an estimated 182 Israeli civilians (4 seriously, 11 moderately, and 167 slightly), not including cases of shock. An estimated 90% of rockets fired were Qassams and 10% were longer range Grads. Prior to OCL, Israel's Shin Bet recorded 27 Israelis killed due to "high-trajectory fire" since the start of the al-Aqsa intifada, 18 by rocket fire and 9 by mortar fire.

The Fatah-linked al-Aqsa Martyrs Brigades (AMB), Hamas, Islamic Jihad, Popular Front for the Liberation of Palestine (PFLP), and the Popular Resistance Committees (PRCs) each claimed to have fired rockets and mortars into Israel during OCL. The AMB specifically claimed to have fired 102 rockets and 35 mortars.

Short- and Medium-Range Rockets

All short- to medium-range rockets—the vast majority of rockets fired by Palestinians during OCL—were homemade. While the various factions have given their rockets different names, all these rockets are generally referred to as Qassams, after Hamas's first rocket. (Islamic Jihad has al-Quds rockets, the AMB has al-Aqsa and al-Yasir rockets, the PRCs have Nasser rockets, and the PFLP has al-Samud rockets.) All of these homemade rockets are very basic; the most sophisticated and accurate are thought to be made and held by Hamas, although other factions, particularly Islamic Jihad, have significant (if less sophisticated) stockpiles. To date, all firing of

Palestinian rockets and mortars has been from Gaza. (In the early years of rocket development ca. 2002, there was some evidence of rocket manufacture in the West Bank, but this seems to have been suspended. Most recently, in September 2007, Palestinian Authority (PA) security forces loyal to Pres. Mahmud Abbas claimed to have seized rocket materials from rival Palestinians in Bethlehem, an assessment Israel discounted.

Homemade Qassam-type rockets are made of easily obtainable metal pipes (such as those used for plumbing or road signs) filled with explosives and propellants. The latter in most cases are improvised from readily available household supplies such as sugar and fertilizer, though they often contain TNT that has either been smuggled in or scavenged from unexploded IDF ordnance. Four steel fins are soldered to the pipe base to improve aerodynamics, while the pipe itself is filled with propellant and fitted with a nose cone containing the explosives. These glorified fireworks are launched from metal stands transportable by hand or on the back of trucks. Since the rockets differ little from mortars (both are short-range, often about the same size, and unguided, essentially being lobbed over the border and exploding where they land), sources often lump together figures for rockets and mortars fired, accounting for discrepancies in tallies. Militants often improve targeting simply by tracking radio reports of where rockets hit.

As of April 2008, Intelligence and Terrorism Information Center (ITIC), with close ties to Israeli intelligence community, estimated that Hamas held "several hundred" Qassam rockets of all types, including a few dozen medium-range Qassams (numbers consistent with IDF and Shin Bet estimates over previous years). To date, no source has tried to estimate which and how many of the various types of Qassams were fired during OCL; all known types of Qassams are listed below.

Qassam 1

Payload: 500 g–1 kg

Range: 3–4 km

Israeli towns in range: Kibbutzim bordering Gaza, Sederot (2 mi./3 km)

Rocket manufacture by Hamas was first reported on 27 October 2001, when an explosion in an open area near Kibbutz Nir Am on the Gaza border was attributed to a Qassam. First confirmed use of a Qassam 1 was against an IDF post at Erez crossing on 25 January 2002, causing no injuries. Prior to Israel's 2005 disengagement from Gaza, much of the Qassam 1 fire targeted Jewish settlements inside the Strip.

Qassam 2

Short range: payload 5–9 kg; range 5–7 km

Medium range: payload 5–9 kg; range 10 km

Israeli towns in range: Sederot (2 mi./3 km); possibly Ashqelon (6 mi./10 km), Netivot (7 mi./11 km)

Equivalents: Islamic Jihad's al-Quds 2 or 3; PRC's Nasser 3 or 4; PFLP's al-Samud; AMB's al-Aqsa)

Qassam 2s have been the primary rocket used since early 2002. The first short-range Qassam 2 is believed to have landed inside Israel on 10 February 2002; the first medium-range Qassam 2 is believed to have hit outside Ashqelon on 28 August 2003. The first Palestinian rocket attack reported to have caused Israeli injuries (5 March 2002 in Sederot) and the first to cause fatalities (an Israeli man and a toddler on 28 June 2004 in Sederot) are both thought to have been Qassam 2s. The long-range version seems simply to be bigger overall than the short-range version.

Qassam 3

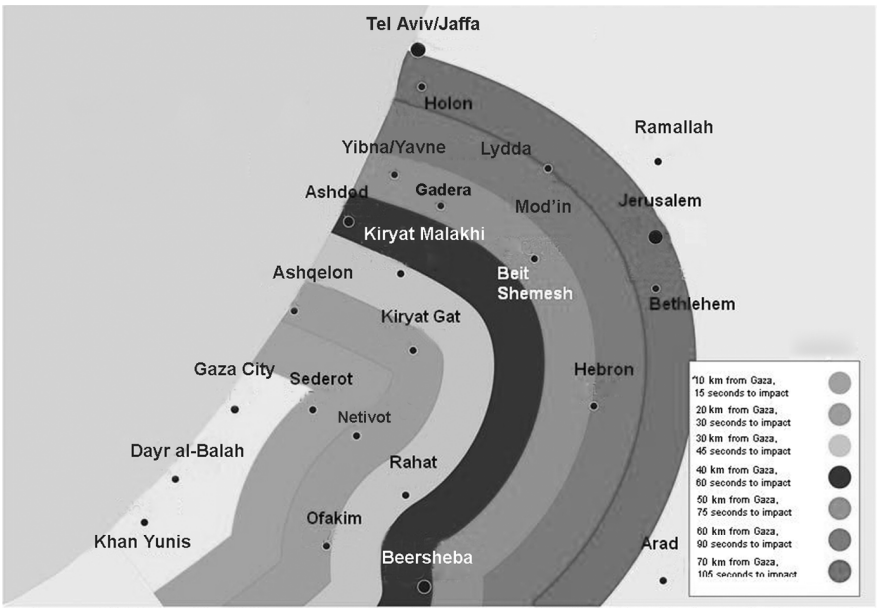
Payload: 10–20 kg
Range: 10–12 km
Israeli towns in range: Ashqelon (6 mi./10 km), Netivot (7 mi./11 km)
Equivalent: AMB's al-Yasir

Hamas first claimed to fire a Qassam 3 in a September 2005 strike that hit Ashqelon. Hamas also developed a dual-engine Qassam 3 that struck for the first time outside Ashqelon on 4 July 2006. Dual-engine versions can carry larger payloads. (Some sources refer to a dual-engine Qassam 2, but Hamas classifies the dual-engine rocket as a variant of the Qassam 3.)

Qassam 4

In February 2007, Hamas confirmed that a Qassam 4 with a range of 15–17 km was in the development stage, but there is no evidence that one has ever been fired, including during OCL.

Palestinian Rocket Range out of Gaza—IDF Estimates



(Source: Israel Defense Forces Home Front Command)

Long-Range (Manufactured) Rockets

Grad/Katyusha Rockets

Payload: 18 kg

Range: 18–20 km

Israeli towns in range: Ashqelon (6 mi./10 km), Netivot (11 km), possibly Ofakim (12 mi./20 km)

Palestinians first began firing longer range, more accurate manufactured rockets, commonly referred to as Grads or Katyushas, in 2006, and used them only occasionally until OCL. Grads and Katyushas originally were truck-mounted multiple rocket launching systems developed by Russia, but they have been copied by numerous countries worldwide. In the Palestinian context, the terms are interchangeable and refer generally to the most basic class of rockets fired by these systems, most commonly 122 mm rockets. Being mass-produced, these rockets are more consistent than homemade Qassams and mortars. They are also more aerodynamically streamlined and larger, meaning they can fly farther and carry more (and higher quality) explosives. Nonetheless, they are still unguided and are not classified as highly lethal by military experts. Gaza does not have the technology to manufacture these weapons, so they are certainly smuggled in. Their origin is debated, but the common belief is that they are sent from/via Iran, Lebanon, or Syria.

All factions reportedly have their own Grads. The first recorded Grad fired from Gaza was by Islamic Jihad on 28 March 2006; it landed near Ashqelon, causing no injuries. Islamic Jihad was responsible for all 4 Grads fired between that date and the end of 2007. The first confirmed case of Hamas Grad fire occurred during Israel's Operation Hot Winter (27 February–3 March 2008), when Grad use spiked sharply (21 total, according to the IDF). The PFLP took responsibility for firing 1 Grad just after Hot Winter's close. Grad use spiked again on 14 November 2008 when Hamas fired 11 Grads, the largest barrage to date, after Israel broke the 6-month cease-fire. As of April 2008, ITIC estimated that the number of Grads held by all factions combined was in the "dozens." If Israeli estimates that 10% of rockets fired during OCL were Grads are accurate, some 70 may have been fired (including the unidentified long-range rockets mentioned below), doubling if not tripling Palestinians' Grad fire to date.

Unidentified 40-km Range Rocket

Israeli towns in range: Ofakim (12 mi./20 km); Kiryat Gat (14 mi./22 km); Ashdod (20 mi./32 km); Gadera (20 mi./32 km); Yavne (24 mi./40 km); Beersheba (25 mi./40 km)

During OCL, Palestinian rockets for the first time hit as far north as Yavne (beginning 28 December) and as far west as Beersheba (beginning 30 December). This range of up to 40 km is farther than any known Qassam or Grad. Military experts who viewed the rocket remains believe that they were of the type manufactured for the Chinese-made WS-1E rocket launching system, which are unguided 120 mm rockets with a payload of 12–22 kg and a range of 20–45 km. It should be noted, however, that while Sichuan

Aerospace Industry Corporation designed and built the WS-1E for the export market, at the time of OCL it had received no orders at all for the system, which reportedly had not yet entered mass production. Since both the mystery rockets and the Grads were unguided 120 mm rockets, sources tended to lump them together under Grads when tallying rockets fired during OCL.

Mortars

Mortars are unguided munitions fired from tubes set on tripods; they cannot be accurately targeted. They are prevalent because they are even simpler to construct and easier to operate than homemade rockets, the trade-off being a shorter range and less explosive capacity. They are tuber shaped, slightly larger than a football, and have a short, 10-point fin assembly on the end. Many are homemade, but the ones that are more highly explosive and longer range are smuggled.

All factions have 80–90 mm mortars (payload 500 g/range 1.8 km), 135–140 mm mortars (payload 1–1.5 kg/range 4 km), and 240–250 mm mortars (payload 1–2 kg/range 2 km), making them comparable in range and payload to a Qassam 1. As of April 2008, ITIC estimated that all Palestinian factions combined possessed "hundreds" of mortars. All factions claimed to fire mortars into Israel during OCL, and at least 167 mortars landed inside Israel during the operation. Because of their short-range capability, mortars were also used against IDF ground forces in Gaza, wounding at least 15 soldiers, but no estimates have been published to date on the number of Palestinian mortars fired during OCL within Gaza itself.

Weapons Used Inside Gaza to Engage IDF Ground Forces

Aside from personal weapons, antitank weapons, and rocket-propelled grenades (RPGs), most of the Palestinian factions' armaments, like their rockets, were homemade improvised devices, as laid out below. (Mortars used inside Gaza, covered above, are not mentioned again here.)

Personal Weapons

Personal weapons in the Palestinian arsenal run the gamut from antique rifles of World War I vintage to modern handguns, M-16s, AK-47s, sniper rifles, and machine guns (including heavy machine guns); some Palestinian factions may also have night-vision equipment. Many weapons and large amounts of ammunition have been smuggled into Gaza by sea, through tunnels from Egypt, and from Israel; in this latter regard, a significant portion of Palestinian-held weapons both in Gaza and the West Bank were procured on Israel's thriving black market of weapons of demobilized IDF soldiers. Hamas also "inherited" an unknown quantity of arms from the PA: In one of the precipitating incidents of Hamas's June 2007 takeover of Gaza, Hamas forces on 1 February 2007 ambushed a large covert arms and ammunition shipment from the U.A.E. destined for the Fatah-led PA security forces in Gaza under Muhammad Dahlan. The contents of that shipment were never detailed, but the weapons are assumed to have been high quality and to have been absorbed into Hamas's arsenal. At the time of the takeover, Hamas also secured control over weapons previously in the possession of Dahlan's

An Israeli police explosives expert approaches the remains of a Qassam that landed near Sederot, 10 January 2009. (Amir Cohen/Reuters)

forces (most notably, heavy machine guns, which these forces had not been known to have previously). Israeli military and security experts estimated that as of early 2008, Palestinians controlled 10,000s of assault rifles, 1,000s of pistols, and up to 6 million rounds of ammunition.

Antitank Weapons, Rocket-Propelled Grenades, and Hand Grenades

The IDF reported ground troops being hit with antitank weapons, RPGs, and hand grenades during OCL combat. Most of the IDF's 336 injuries were sustained by such light weapons and small arms fire, with at least 12 wounded by antitank fire. At least some grenades and antitank weapons were manufactured covertly in Gaza (overlapping somewhat with IEDs described below), while the rest were smuggled in. Prior to OCL, Israel believed that the Palestinian factions controlled 100s (perhaps 1,000s) of antitank weapons, including dozens (perhaps scores) of precision-guided rounds, as well as 100s of RPGs and dozens of launchers, including at least 10 shoulder launchers. Precision-guided antitank weapons were thought to include Russian-made Konkus and Saggers, and AT-5 Spandrels made by Russia or copied by Iran. RPGs were thought to be Russian-made RPG-2s (82 mm) and RPG-7s (40–105 mm).

Roadside Bombs/Improvised Explosive Devices/Land Mines

Palestinians have made no secret of possessing roadside bombs, land mines, and improvised explosive devices (IEDs) and have deployed them on occasion. The Palestinian factions had also previously used and were assumed still to possess stockpiled homemade fragmentation charges, shaped charges, and underbelly charges to target IDF tanks, armored vehicles, and troops. Such devices (handcrafted metal cases packed with smuggled or salvaged TNT and sometimes packed with nails or ball bearings) had previously been thrown at troops, set with trip wires, remotely detonated (typically by cell phone), or wired to be detonated by pressing a button. However, no IDF soldiers

were specifically reported to have been harmed by any of these devices during OCL, and although some may have been used, no information is available.

Booby Traps

Once ground operations began on 3 January, the IDF reported uncovering many booby-trapped homes, tunnels, and institutions, including a school. The IDF circulated photographs showing a massive canister of gasoline rigged to explode when windows or doors were opened and described being lured to caches of weapons rigged to detonate when confiscated by Israeli soldiers. In one Gaza City suburb, the IDF claimed that some 30 homes were rigged to explode when troops entered, though residents denied this and the reports were never independently confirmed. In any case, the IDF reported that at least 3 of its soldiers had been wounded upon entering a booby-trapped house. It should also be noted that Palestinian factions had attempted during clashes with the IDF in the past to draw Israeli troops into booby-trapped areas and can be assumed to have done the same during this operation.

Suicide Bombers

Israeli military sources reported several incidents of Palestinian suicide bombers making failed attempts to get close to combat units in Gaza during OCL and confirmed on 13 January that 1 IDF solider had been killed by a suicide bomber the previous week. The extent to which Palestinians used this tactic has not been independently corroborated.

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Israeli children stand next to an apartment building hit by a Palestinian rocket in Netivot, Israel, 28 December 2008 (day 2 of Operation Cast Lead). (Uriel Sinai/Getty Images)