



The World's Guide to Commercial Remote Sensing

Imaging NOTES

Fall 2004 » Vol. 19 » No. 4

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destruction

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Verifying destruction in the southern

Gaza Strip

Satellite imagery is being

used by Human Rights Watch to provide verification of the physical condition of sensitive geographic areas within the Gaza Strip.

Since the beginning of the *Intifada* in September of 2000, Human Rights Watch estimates that the Israel Defense Force (IDF) has destroyed more than 2,400 houses in the Gaza Strip. About two-thirds of the destroyed structures were located in and near the Rafah refugee camp at the southern end of the Gaza Strip along the border with Egypt.

Imaging satellites are ideal tools for observing and recording this destruction, as they document, map and provide quantitative data on the actual physical condition of the area. Human Rights Watch obtained eight satellite photographs from the IKONOS satellite of the southern Gaza Strip spanning the time period of April 21, 2000 through May 29, 2004. These remotely-sensed data supplemented field research and interviews conducted by a Human Rights Watch team in Gaza during July of 2004 as described in a forthcoming report (www.hrw.org).

Rafah lies at the center of the 12.5 kilometer-long border between the Gaza Strip and Egypt. It is a dusty city and refugee camp of sprawling concrete homes — one of the poorest and worst-affected areas in the Palestinian-Israeli conflict. The 1979 Camp David Peace Treaty bisected the town between Egyptian Sinai and the Israeli-occupied Gaza Strip, with the result that houses, fields and orchards, at that time, lay very near the border. This was still largely the case in April of 2000, as can be seen in the satellite photograph displayed in **Figure 1 – upper**.

This border area with Egypt is known to the Israelis as the “Philadelphia Corridor” after the IDF designation for the patrol road visible in Figure 1. In 2000 the Philadelphia Corridor was approximately 20 to 40 meters wide, and included a three-meter high concrete wall topped with barbed wire. By May 2, 2003, the corridor was 80 to 90 meters in width (**Figure 1 – lower**).

Imagery provides objective view

FRED ABRAHAMS
Consultant

MARC GARLASCO
Sr. Military
Analyst

DARRYL LI
Finberg Fellow

MATTHEW MCKINZIE
Consultant

Human Rights Watch
New York, N.Y.
www.hrw.org



April 21, 2000 (Space Imaging)

May 2, 2003 (Space Imaging Eurasia)



Beginning in late 2002, after destroying hundreds of homes along the border, the IDF built an eight-meter high metal barrier in front of a long section of the border with Egypt to facilitate the movement of Israeli troops without exposure to hostile fire. This metal wall also extends two meters under ground. The satellite photographs of Figure 1 show Rafah's "Block O," one of the most damaged areas of the camp.

The satellite imagery obtained by Human Rights Watch of the destruction of Palestinian homes and agriculture displays a clear pattern: the creation of a substantial buffer zone by the Israelis between the border with Egypt and Rafah. Between 10 and 20 percent of the refugee camp has been destroyed in the creation of this zone.



The main stated reason for the destruction of homes in Rafah has been described by the Israeli military as operations to find and destroy tunnels between Rafah and Egypt. Tunnels are both a longstanding acknowledged fact in Rafah and a phenomenon immersed in rumor. In the 1980s Palestinian smugglers began to dig tunnels in the soft sand to facilitate the transfer of goods, mostly cigarettes, alcohol, and drugs. The tunnels were an economic venture at the time, and their value increased as Israel tightened its controls around the Gaza Strip. As resistance to the occupation increased, the tunnels were used for arms and ammunition. Today, the tunnels are operated by a small group of smugglers who plan, dig and maintain the passages, transporting goods for whoever pays.

While in Gaza, Human Rights Watch compiled case studies on Israeli tunnel interdiction. Residents of Rafah protested the excessive and indiscriminate nature of the Israeli military's destruction, but many also had contempt for the profiteers who dig tunnels in their neighborhoods, thereby providing the IDF with a pretext to demolish homes.

OPERATION RAINBOW

On May 12, 2004, an IDF armored personnel carrier heavily laden with explosives was destroyed in the Rafah buffer zone near Block O, apparently by a rocket-propelled grenade. The powerful explosion killed five soldiers and showered the area with fragments. The military wing of Islamic Jihad claimed responsibility.

Israeli tanks, Caterpillar D9 armored bulldozers and helicopters moved against Rafah's Block O on the evening of May 12, firing shells and missiles as residents fled. At the end of the operation on May 15, 88 houses in Block O and the neighboring "Qishta" area had been destroyed. On May 17, the IDF launched "Operation Rainbow," the first division-level offensive in the Gaza Strip during the *Intifada*.

Operation Rainbow primarily targeted two areas: Tel al-Sultan, on the northwest outskirts of Rafah; and the Brazil and Salam neighborhoods, in eastern Rafah, closer to the border (see Figure 2). The IDF did not enter the densely populated center of Rafah. Tel al-Sultan is a newer neighborhood several kilometers northwest of Rafah's center. Israeli forces seized control of Tel al-Sultan on May 18 and imposed a 24-hour curfew. D9 bulldozers extensively tore up roads in Tel al-Sultan, causing severe damage to sewage and water networks. On May 19, a group of several hundred Palestinians marched towards Tel al-Sultan from the center of Rafah, demonstrating against the incursion there. Israeli tanks and helicopters opened fire on the crowd, killing nine people, including five people aged 18 or younger.

Israeli troops pulled back from Tel al-Sultan on May 21. Over the next few days, the most extensive property destruction was at two large agricultural areas full of greenhouses, both more than one kilometer from the border and not near any settlements.

'Ala al-Din Faiz Buraika watched the destruction from his home adjacent to the western-most agricultural area when it began on May 20. "No one could get out or in, tanks were surrounding the area," he told Human Rights Watch. "They surrounded Tel al-Sultan and cut it from the town. They used bulldozers and tanks, with Apaches [helicopters] protecting them from above. They spent three days destroying the greenhouses, which grew onions, melons and flowers." Human Rights Watch inspected both agricultural areas in Tel al-Sultan. Both were devoid of any greenhouses; only ruptured earth littered with metal and glass remains. Figure 3 contrasts before and after satellite images of the agricultural area west of Tel al-Sultan, illustrating this damage.

The IDF accelerated Operation Rainbow by launching an offensive deep into the Brazil and Salam areas of Rafah, also for the first time in the *Intifada*. Two patterns





of house demolition are evident in Brazil from the satellite imagery. In the interior of the camp, the IDF bulldozed paths through blocks of one-story houses. Closer to the border, destruction seems to have been more indiscriminate, leveling wider swathes of housing. **Figure 4** contrasts a before and after image of the Brazil quarter. The Rafah Zoo marked the deepest point of penetration into Rafah, where Israeli forces set up a perimeter to isolate Brazil. The demolition continued throughout much of May 20 and resumed periodically until the redeployment of the IDF out of Rafah Brazil on May 24. According to United Nations Relief and Works Agency (UNRWA), the IDF demolished 154 houses in Brazil and Salam.

PATTERNS IN THE RUBBLE

Satellite imagery of the southern Gaza strip during the *Intifada* provides a quantitative assessment of damage over time to building structures and to agriculture. This data was used in conjunction with field research by Human Rights Watch to better understand the cumulative impact of IDF operations in Rafah and neighboring areas and to document the damage that occurred over several days in May, 2004. In contrast to the house demolitions since 2000 that have gradually expanded the Rafah buffer zone, Operation Rainbow involved widespread destruction deep inside Rafah, far from the border. In both patterns of damage to Rafah, satellite imagery has provided a uniquely objective and comprehensive window into the humanitarian crisis in Gaza.

A full report is scheduled to be released this fall by the Human Rights Watch. ❖