

Al-Qaeda eyes a 9/11 for satellites

Experts are warning that al-Qaeda has the desire—and the knowledge—to take out satellites. Dawn Rae Downton reports on the devastating impact such an attack would have on business, communications—and the American military

by Dawn Rae Downton

In May, 1998, mortally wounded by contamination on a printed circuit board, Galaxy IV failed as it sat in geostationary orbit over the middle of the Western hemisphere. Ninety percent of the pagers in the U.S. and Canada -- 45 million of them -- fell silent instantly, including the pagers of volunteer firefighters and doctors on call. CBS, Reuters and UPI lost their news feeds; gas-pump credit card readers and ATMs stopped working from St. John's to San Diego. It was up to a week before most users were back on line.

This is what happens when a single 'bird,' one of several hundred up there, bites the dust. Imagine the chaos when they all fail at the same time. Security experts say that al-Qaeda has imagined just that. It's not so hard to interfere with satellites, and especially to destroy them. Sooner or later, the experts think, al-Qaeda will have our birds in its sights.

While communications satellites alone generate \$50-billion to American industry and \$120-billion worldwide, money's not the object here. Catastrophe is the goal, since without satellites we'd be nowhere, literally, with our security compromised.

Satellites allow us to use our cellphones -- and give the U.S. government access to every call. (Ottawa has similar access to each call made in this country, but is prohibited from using it without court permission.) Geostationary satellites distribute our TV signals, tie together financial institutions, monitor weather. Commercial communications satellites do just about everything -- for instance, one was used until 2000 by Osama bin Laden himself (his phone number was 00873 6825 05331). Without commercial satellites, couriers can't deliver and grocery stores don't get stocked.

U.S. military commanders use Iridium satellite phones to call out from the deserts of Iraq and the mountains of Afghanistan (as well as the myriad of places the U.S. military says they're not). These 66 satellites zipping around the earth every 100 minutes in a relatively low orbit of 775 kilometres were originally a worldwide cellphone network owned by Motorola. Launched in 1998, Iridium promptly went bankrupt for lack of subscribers. The U.S. Department of Defence is now its heavily dependent prime user, and an Iridium failure would confound troops overseas. (Anyone can buy an Iridium phone, which can be used like a cellphone anywhere in the world, but at \$1,000 a phone and \$5 a minute, most people buy cellphones instead.)

American spy satellites watch around the world, and look down on us right here at home. Echelon, satellite-based and operated by the National Security Agency, gives the United States the capacity to monitor every cellphone conversation and e-mail exchange in the world. The last July 21 London bomber to be apprehended was traced by cellphone calls to Italy, where he was picked up. Echelon is of particular interest to terrorists because of its relentless snooping into their cellphone and e-mail conversations.

The U.S. National Security Agency is guaranteed access to Canadian domestic conversations -- yours, mine -- as well as access to conversations in other countries by a 1948 agreement called UKUSA (named after the original

signatories, although Canada, Australia and New Zealand joined later. Non-signatories are monitored whether they like it or not). The text of UKUSA remains classified.

How does Echelon do it? National Security Agency installations like the one at Menwith Hill in Britain intercept fibre-optic cables, handle about 300,000 calls simultaneously and dump the traffic into a grid of super computers called Echelon Dictionary. ED looks for key words and names; additionally, it recognizes voices of 'persons of interest.' Every time one of these speaks on a cell, ED studies the conversation. (In 2003, bin Laden's chief lieutenant, Khalid Sheikh Mohammed, was nabbed in Pakistan this way.)

In space, ED is assisted by several SIGINT (Signal Intelligence) satellites. Three of these, the Trumpets -- 6-tonne, billion-dollar monsters with 100-metre antennas -- were launched by the U.S. exclusively to monitor cellphones. Some SIGINTs fly low and others high, and when a Trumpet is in a low orbit you can actually see it coming up over the horizon. Wherever they are, their locations are known.

And then there are navigation satellites. GPS rescues hunters and sailors, and puts OnStar in your car. During Desert Storm, GPS allowed Cruise missiles to target specific buildings in Baghdad, and even to decide which bathrooms to hit. Lately there haven't been enough GPS units to go around to all the troops in Iraq, and families have bought them at Wal-Mart and sent them over.

GPS has infiltrated our lives, and not just for positioning everything that walks, drives, floats or flies. Telephones, cellphones and the Internet all use GPS for synchronizing their digital networks so that transmitters and receivers run at the same bit rate, or 'clock rate.' If we lose GPS, not only won't we know where we are, we won't be calling for help.

GPS is controlled worldwide by the U.S. Department of Defense. Small wonder that Europeans are preparing to launch their own version, called Galileo.

Dan Goure, a senior fellow at the Lexington Institute, a defence policy think-tank in Arlington, Va., has told Global Security Wire that 'from a military point of view, [GPS] has to be a No. 1 or No. 2 target' of America's enemies. The system consists of 24 satellites the size of Buicks which orbit the planet every 12 hours from 20,000 kilometres above the Earth's surface. Because it plots positions by triangulation, each bird transmits its position over and over to every GPS receiver on the ground. Anyone with a receiver has no problem finding the satellites; and the three ground stations around the world that control them do so with frequencies that are public knowledge. The Department of Defence has been saying for years that there's barely a country left without the resources to damage its system.

Most important for jihad, if enough of America's satellites stop working, so does its military. Billions in the Pentagon budget have gone to examining what is called 'Space System Negation Capabilities.' There are a few GPS spares in orbit, but launching others, by rocket, would be complicated and take weeks. While a stealth satellite called Misty 3 is being contemplated, there's little else. To some analysts and politicians, Misty seems as likely as the Klingon cloaking device on Star Trek.

Defence Secretary Donald Rumsfeld has said publicly that the United States is looking at a 'space Pearl Harbor.' The possible methods for that surprise attack on space range from the crude to the complex. Lieutenant-Colonel Conrad Widman of the U.S. Space Warfare Centre noted in 2001 that to jam a satellite, 'all you need is a spectrum analyzer, a signal generator, a satellite transmit-and-receive terminal, a computer with a couple of modems, and 200 lines of software.'

You pay, he said, to get what you need. 'A lot of commanders are surprised when we show them the excellent resolution of the satellite imagery now available to anyone with a credit card.'

The other most likely satellite-damaging scenario involves firing something at the birds as they float by in space. The weapon could be as complex as a nuclear bomb or as simple as a payload of ball bearings launched into satellite orbits -- perhaps a dozen countries have the capability to dispose of low-flying Iridiums this way, and even the high-altitude geostationary birds and GPS. High-energy radio frequency (RF) signals can disrupt satellites temporarily, or cook them outright. The high-power magnetrons used in long-range search radars along with high-gain antennas are

readily available; you just have to know -- or be told -- what you want. The search radars operate in the same general frequency band, the L-Band, as do the uplinks for GPS and Iridium.

For its potential to blackout the world, GPS is an attractive but complicated target. Control signals from its three ground stations are heavily encrypted. Though a single rogue signal launched on the uplink command frequency will disrupt operation, calamity requires the simultaneous disabling of many birds flying in many directions. While GPS could be destroyed bird by bird, with lasers or RF beams, the ground stations make better targets, with the same result -- 24 lumps of scrap metal orbiting a dark, cold, silent planet.

In Europe, France's anti-terrorism czar, Jean-Louis Bruguiere, last year predicted London as al-Qaeda's new priority after Madrid, and told *The New Yorker* that the organization has acquired a sophistication at jihad beyond anyone's expectations.

(It was Mr. Bruguiere who warned the Canadian government in the late '90s about an Algerian asylum-seeker living in Montreal named Ahmed Ressay, the would-be millenium bomber of the Los Angeles airport.) He says that in the Caucasus, particularly the Pankisi Gorge of Georgia, and in nearby Chechnya, recruits are being trained in chemical and biological weapon-making as well as in military systems, and that some graduates 'have the capacity for hijacking satellites.' Chechnya, he says, is becoming an 'aircraft carrier' from which continuing attacks will be launched in Europe.